

American Forestry

VOL. XX

DECEMBER, 1914

No. 12

THE SWITZERLANDS IN AMERICA

By AGNES C. LAUT

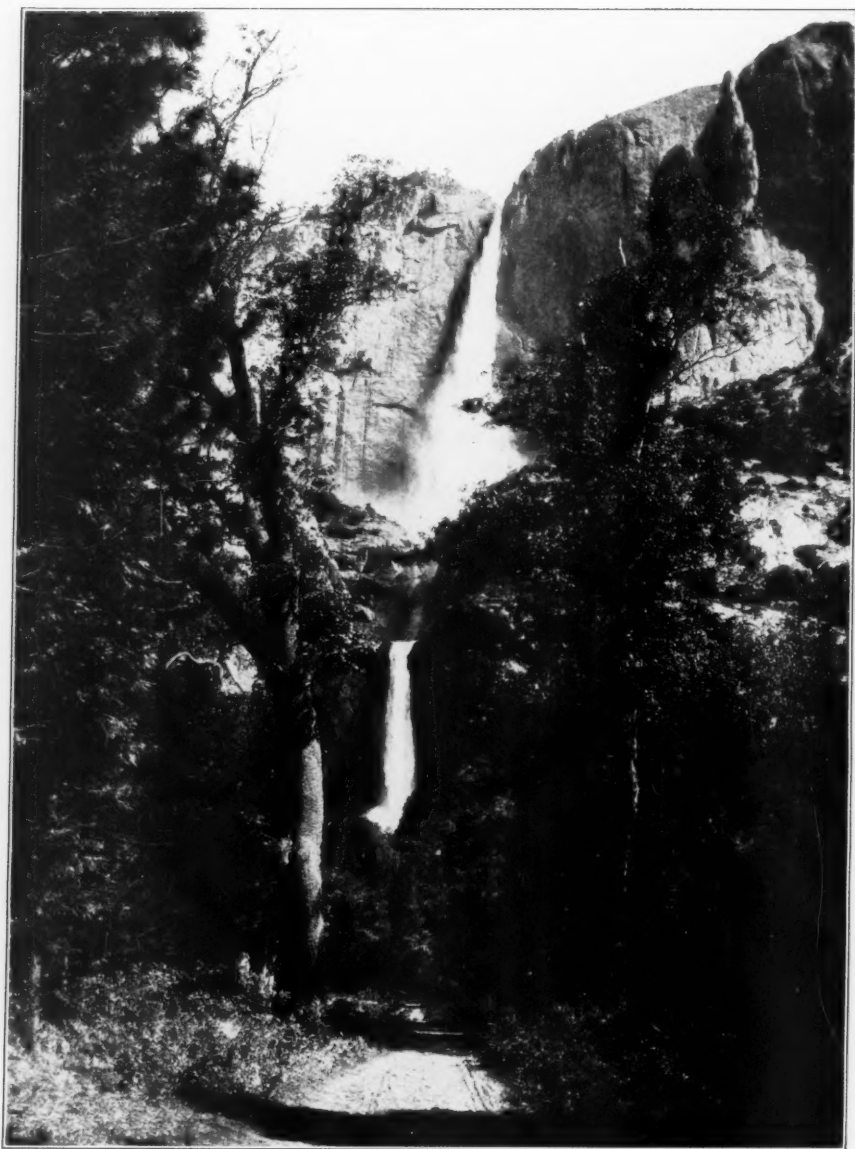
FOR twenty years geologists and explorers have sung the beauties of mountain scenery in America to an unheeding world. Americans have been told and retold how you could lose a Switzerland in the ice fields of the Canadian Rockies, or count more unclimbed peaks in Glacier National Park than there are climbed peaks in Switzerland, or drop the Alps into the bottom of Grand Canyon and see only peaks come above the rim of the deep gorge—Americans have been told and retold all this. They would have none of it. They either did not believe it, or did not want to believe it. For one person who bought a round trip ticket to the American West, two bought round trip tickets to Europe.

That was until the War broke out.

Until the War broke out, America had lacked the human, lacked the historic, lacked the picturesque. Suddenly, American tourists found they were suffering from a European brand of too much human, too much historic, too much picturesque. Their own land took on instantaneous roseate hues. Never was such an immediate cure of the foreign mania witnessed that everybody wanted to see America first. Said an American woman, who landed bedraggled in London without a hat but carrying a bird cage and a band box—"Never again! I'm cured of Europe! Terra cotta, or terra firma, or any old American terra is good enough for me!"

Within a week of the declaration of War, American railroads were overwhelmed with enquiries for accommodations West. At first, they thought it a backwave of tourists from Europe; but

as enquiries continued, it became apparent that American tourists for the first time in history were going to explore their own land. One heard no more of the fustian nonsense about America lacking human interest. All the pseudo-culture of chasing over Europe with a club for the unattainable in one's own soul, all the tinsel glamor of Paris fashions and European art, suddenly sloughed off and revealed the primitive monster horrors of blood-lust and rapine and ruthlessness. Culture and art and glamor went down under the feet of a Great Blonde Beast rampant that Americans had not dreamed could exist under the mask of a civilization top heavy with learning and mellow with centuries. Raw, crude, rude, new America seemed a mighty good place to be. American cowboys might shoot up saloons and jingle their spurs and give extemporized "neck-tie" parties to murderers and thieves; but they didn't bayonet babies and shoot priests and rob women and loot tourists. Also, the spectacle of every nation in Europe wooing America, kow-towing to Uncle Sam of striped pants and prunella gaiters—must have stiffened up a good many flabby tourists' back bones. Anyway, for the first time, the tide of American travel has turned back on itself. For the first time, America is going to tour her own lake country, and visit her own battlefields, and climb her own mountains, and parade her own Rivas—of which she has distinctly four. It will be a surprise for the most of Americans to learn that four lake sections exist on their own continent equal in beauty to the Tros-



Courtesy of the Southern Pacific Ry.

YOSEMITE FALLS IN YOSEMITE VALLEY, CALIFORNIA.

YOSEMITE FALLS PLUNGES OVER THE CLIFF TO THE FLOOR OF THE VALLEY 2600 FEET BELOW. THERE ARE IN REALITY THREE FALLS. THE FIRST AND LARGEST LEAP OF THE STREAM IS 1600 FEET STRAIGHT DOWNWARD; THEN COMES A SERIES OF CASCADES FOR 600 FEET, AND FINALLY THERE IS ANOTHER VERTICAL DROP OF 400 FEET.



Courtesy of the Southern Pacific Ry.

CATHEDRAL ROCKS, YOSEMITE VALLEY, CALIFORNIA.

THESE PINNACLES ARE REMINISCENT IN THEIR FORM OF DUOMO AT FLORENCE. ONE OF THE SPIRES RISES 2678 FEET ABOVE THE VALLEY AND IS UNSUPPORTED AND UNCONNECTED WITH THE MOUNTAIN FOR 700 FEET, WHILE THE OTHER SPIRE IS 2579 FEET ABOVE THE VALLEY.

sachs of Scotland, or Lake Country of Italy. Of battlefields, there are more than enough; but only a few are as much as marked; and I doubt if any guide book exists to pilot the tourists to those few. In Florida, on the inner coast of the Gulf, at Galveston, from Monterey to Santa Barbara—are American Mediterraneans; and from Grand Canyon to the Canadian Rockies lies a succession of Switzerlands practically unexplored.

The great mountain playgrounds lie for the most part within the bounds of the National Forests. There are six distinct belts of as different a character as the Dolomites of Austria from the Trossachs of Scotland; and it would be just about as sensible to attempt to do all the mountain resorts of Europe in one season as all the mountain playgrounds of America.

Begin at the South! There is the Grand Canyon Painted Desert region—though it will be news to the most of Americans to know that chains of mountains high as the Rockies lie sunken in the abysmal gorge of the Canyon and that snow peaks loom opalescent above the lavender mists of the Desert.

North of the Painted Desert come the mountains of Estes Park and Colorado—high park-like areas of Englemann spruce with turquoise lakes lying in alpine meadows and a rush of angry waters coming down from the snowy peaks. In fact, on one railroad in Colorado you can lunch in a snow shed 11,000 feet above sea level and play snow ball in mid-August.

Westward are the Sierra groups of mountain resorts—Hetch-Hetchy and the Yosemite and the Mariposa Grove—all made famous by Muir's pen, and yet more famous by their exquisite beauty and remote aloof grandeur—as of a still isolated sacred world.

Yet northward come three more mountain playgrounds—Ranier, Glacier National Park, and the Canadian Rockies—all distinguished by similar characteristics—dense forests of pine and hemlock, enormous fields of glacial ice and snow—I have tramped some of these fields twenty-five miles without

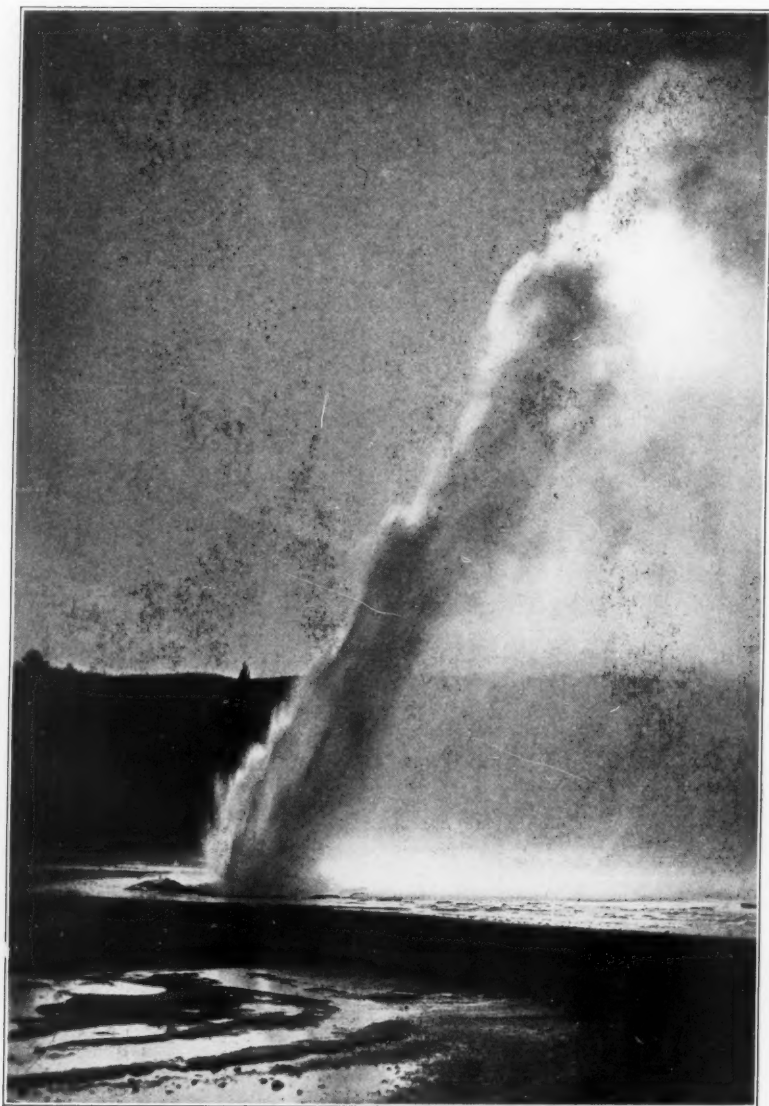
leaving snow—and lofty pinnacled peaks, with a roar of mountain torrents, down from the eternal ice and snow to wild gorges where the mad plunge of the water has literally torn a path through the solid rock. The phrase "eternal ice and snow" is not metaphor. It is literal. On Mount Ranier, in the Illecillewaet and Asulkan Valleys, down the back of Cathedral Peak, lie snow and ice that date from the ice age. Round the Valley of the Ten Peaks, or Moraine Lake, you can ascend glaciers and glacial moraine, where you can literally count the years and the decades of years back the centuries like the rungs of an ascending ladder, from the ledges or circles of ice pack and snow pack. That is—the year's snow fall of fifteen or twenty feet packs and thaws into a solid layer, distinguished from the preceding year by its silt of pulverized rock and atmospheric dust. Between two of the Ten Peaks you can climb a glacier for three miles where the year's snow fall lies like steps of a stair. Similar ledges of ice are observable on the glacier below Mt. Victoria—that white wall of alabaster that stretches for twelve miles between sky and earth above the wonderful peacock blue lake at Laggan. Where the train dives into a snow shed in the Canadian Rockies, or in Colorado, and one comes out to see huge mountain slopes swept clear as by a mighty broom—the force and terrible swiftness of the avalanche seem near; but at Lake Louise, Laggan, you can sit in your bedroom and see the snow slides slip over the white ledges of Mt. Victoria like tenuous wind-blown falls; and never realize that you are watching an avalanche till you hear the far boom of the fall like thunder. It does not need to be told here—that glaciers are not advancing but receding—an inch or two a year—like the foot of an icy ancient drawing back from modern days. Nor need it be told here that you can always tell the character of the Upper Alpine Country by the color of the mountain streams below. Streams from a glacier are milky from the silt worn off the under rocks by the grind of the centuries' ice. The silt often—as in the Big Bend of the Columbia—imparts an almost vitriol greenish blue.



Courtesy of the Southern Pacific Ry.

MIRROR LAKE, YOSEMITE VALLEY, CALIFORNIA.

THIS BEAUTIFUL SHEET OF WATER IS HAPPILY NAMED FOR UPON ITS PLACID SURFACE ARE PERFECTLY REFLECTED THE TOWERING FORMS OF THE HALF DOME
CLOUD'S REST AND MOUNT WATKINS. SUNRISE UPON MIRROR LAKE IS JUSTLY FAMED.

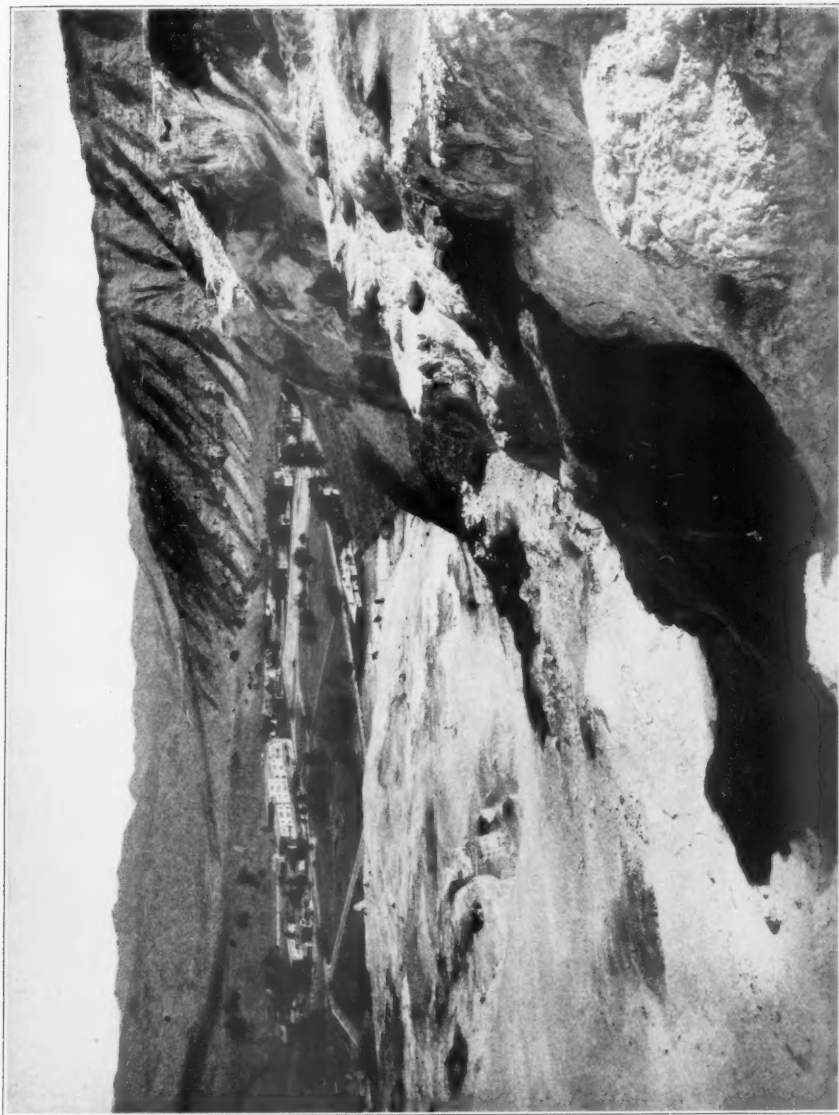


Copyright by Haynes, St. Paul.

Courtesy of the Northern Pacific Ry.

DAISY GEYSER, YELLOWSTONE NATIONAL PARK.

ONE OF THE SEVERAL WONDERFUL GEYSERS WHICH HAVE ATTRACTED THE ATTENTION OF TOURISTS EVER SINCE THIS, THE OLDEST OF ALL THE NATIONAL PARKS, WAS OPENED IN 1872. THIS GEYSER IS IN THE LOWER PART OF THE UPPER GEYSER BASIN NEAR THE GROTTO AND GIANT GEYSERS. IT PLAYS ABOUT 75 FEET HIGH FOR ABOUT THREE MINUTES AT A TIME AT INTERVALS FROM ONE AND A HALF TO TWO HOURS. DURING 1914 IT HAS BEEN MORE ACTIVE THAN USUAL.



Copyright by Haynes, St. Paul.

MAMMOTH HOT SPRINGS AND HOTEL VALLEY FROM TERRACES, YELLOWSTONE PARK.

Courtesy of the Northern Pacific Ry.

MAMMOTH HOT SPRINGS IS THE ADMINISTRATIVE CENTER OF THE PARK. IT IS THE HEADQUARTERS OF THE GOVERNMENT OFFICIALS AND OF THE YELLOWSTONE PARK TRANSPORTATION COMPANY AND THE HOTEL COMPANY. THE MARVELOUS PAINTED TERRACES ON THE SIDE OF TERRACE MOUNTAIN WITH THEIR IMMACULATE HOT-WATER RESERVOIRS ARE THE CHIEF OBJECTS OF INTEREST. BUT THE SPOT IS MOST PICTURESQUE ASIDE FROM THE TERRACES. IT IS A GREAT MOUNTAIN BOWL WITH BREAKS OR PASSES HERE AND THERE THROUGH THE HIGH MOUNTAINS THAT AFFORD VISTAS OF RARE BEAUTY.

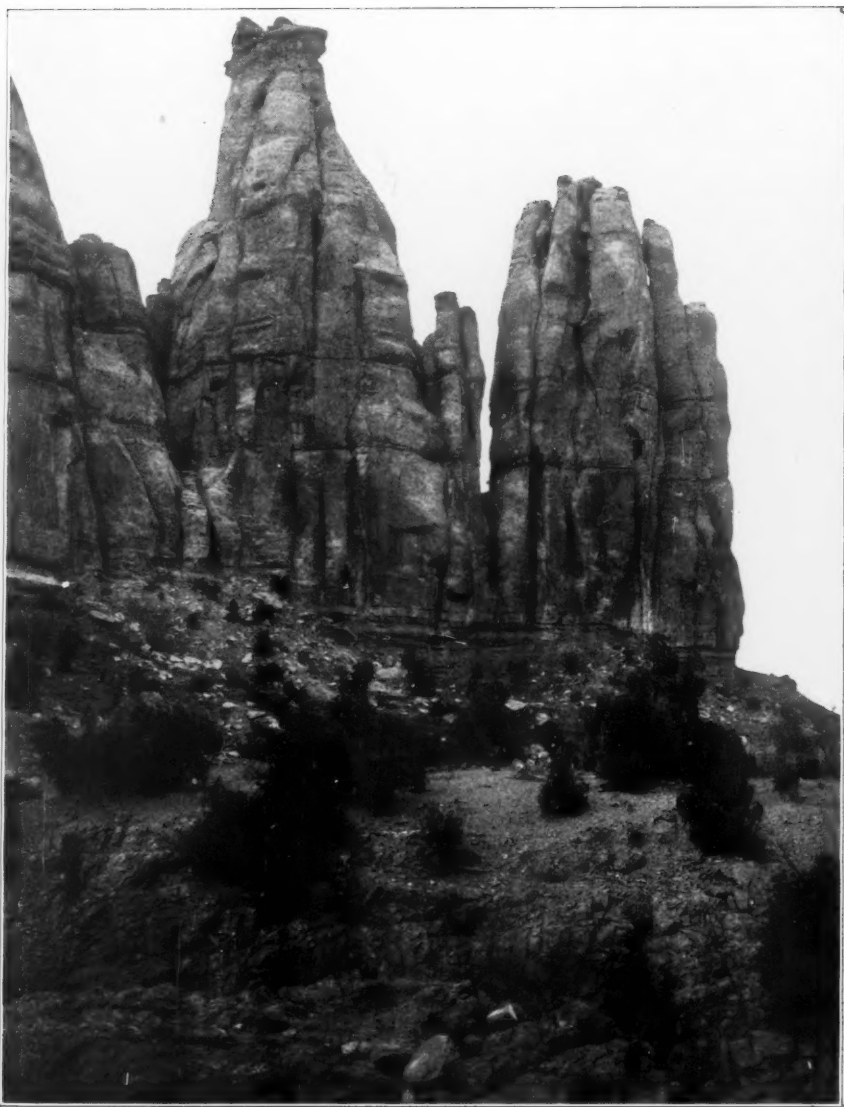
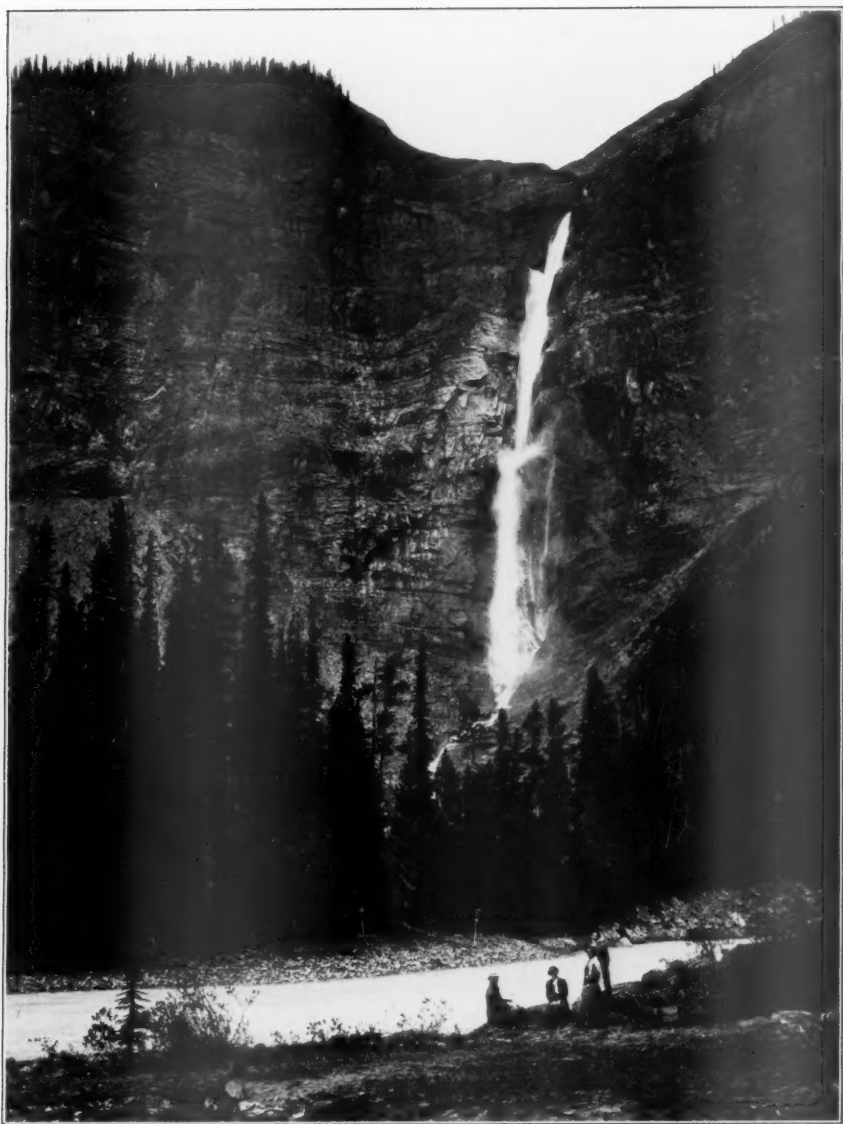


Photo. by G. L. Beam, Denver, Colo.

THE COURT GROUP.

Courtesy of Denver & Rio Grande Ry.

ONE OF THE SIGHTS OF THE COLORADO NATIONAL MONUMENT NEAR GRAND JUNCTION, COLO., ON THE DENVER & RIO GRANDE. NEAR VIEW OF "COURT GROUP" WITH "DOME OF JUSTICE" NEAR CENTER AND "NINE JUDGES" AT RIGHT. NOTE FIGURE OF MAN ABOUT HALFWAY FROM CAMERA TO ROCKS WHICH WILL GIVE AN IDEA OF THEIR TREMENDOUS SIZE.



Courtesy of the Canadian Pacific Ry.

TAKAKKAW FALLS.

ONE OF THE SCENIC WONDERS IN THE CANADIAN ROCKIES NEAR FIELD, BRITISH COLUMBIA. THIS REMARKABLE CATARACT IS IN THE YOHO VALLEY, MAKING A DESCENT OF TWELVE HUNDRED FEET. IT IS A FOURTEEN MILE DRIVE FROM FIELD.

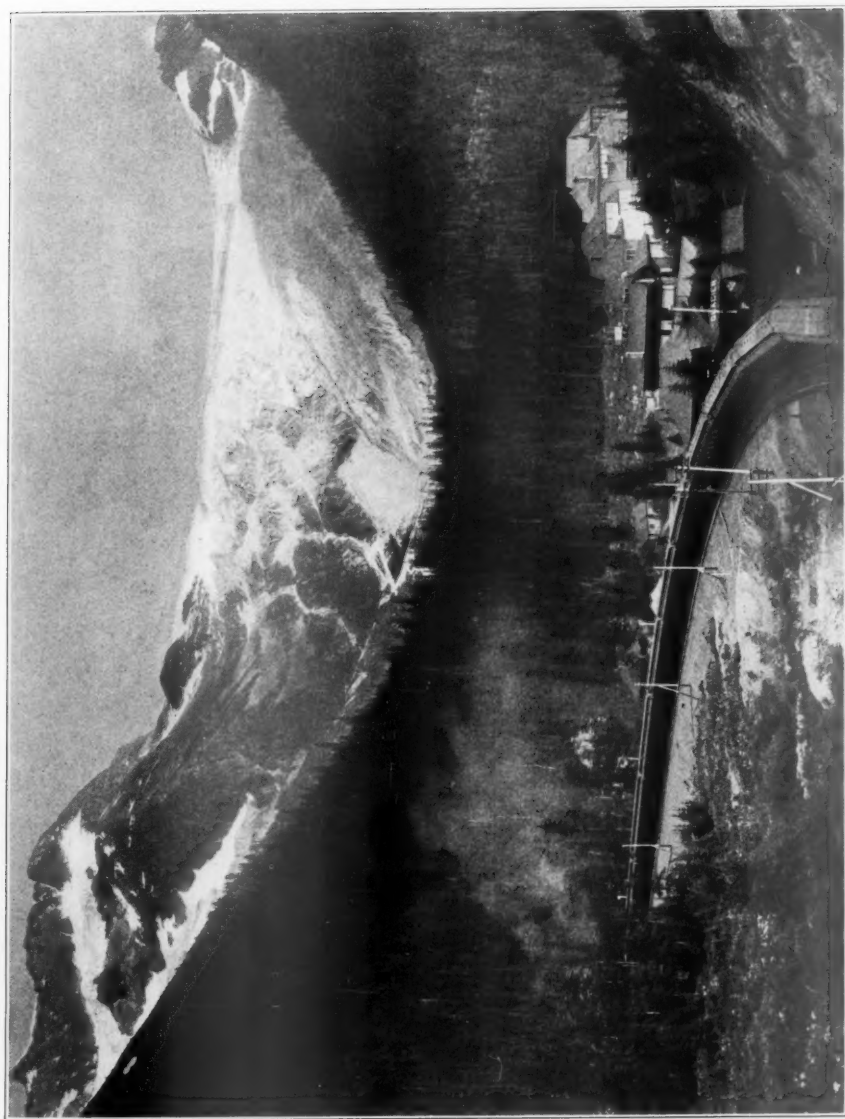
Soil along the banks of a glacial stream is soft and fine as wet flour. It has been ground by the mountain gods between the upper and nether mill-stones of ice and adamant. Streams from snow peaks are clear as crystal. They come shouting down the mountain sides with a leap of foaming laughter and joy as of life disimprisoned by sun warmth from snow death; and they hardly quiet their wild leaping till far out on the prairie, as East of Denver, or East of Calgary.

I have been asked by sluggish souls what good it does you to risk breaking your neck climbing mountains. It is like asking what good it does to bathe both body and soul in an atmosphere of ozone that electrifies every dull nerve in your body and turns amuck in every one of your slow-going blood corpuscles a small galvanic battery. It is like asking what good it does you to gain a new lease of life, so that you are no longer tired in muscle or mind: what good it does you to breathe ten thousand years of atmosphere distilled of untempered sunbeams and the healing resin of the pines. An Easterner lies quiescent in a bower of roses and forgetfulness—that is his Nirvana. Not so the Westerner—when mind and nerves are tiredest is the time he shouts not for quiescence, but for life, more life, and that is what the mountains impart with their ozone stabbing to new life, and their leaping torrents shouting of life, disimprisoned life, and their pines tossing wild arms to the winds of heaven, taking but the deeper grip of the eternal rocks the wilder the tempest. Mountains are what explain that most precious possession of Northern races—virility, grip, fire!

To come down from the mountains to very mundane practical considerations for the tourists, who are going to see their own country first—it need not be told that you cannot tour the American West in the luxury you tour Europe. You can go to the foot hills of pretty nearly every peak of first rank in a motor, if you want to; and if you want to, at the foot of that peak you can sit you down in a palatial hotel that is an imitation of a hotel in London or Paris, and pay you the most palatial

prices—prices to make up for the fact you didn't take the \$1,000 cabin crossing the Atlantic. But if you really want to see the West, there is a better way of turning the trick. I am sorry I cannot give the same recipe for turning the trick in each of the six belts of mountains; but you must go differently to each. Don't attempt to do all, or even part of one, in one year! Choose what you want to do! Then choose your playground! Then write to the National Forest Supervisor of that playground for directions! If you want to hunt, do not go to those National Parks which have perpetual closed seasons for game—such as the Banff Park region, or the Grand Canyon Park. If you want to fish, don't go to the Desert, unless to such exceptional valleys as the Verdes of Arizona; and if you want to sleep under the stars, don't go to the Northern mountains which are misty and cold at night in the warmest summer months. At two o'clock on an August morning on Moraine Lake I have put on a buffalo coat and called in the camp dog to put my feet on him and kindled the camp fire, and then shivered. And if you want to see seracs—where the glaciers tumble over a precipice and form blue ice caverns—and to negotiate crevasses where the snow has covered a chasm a thousand feet deep, better go far North; and always—literally always without one exception—go in twos and threes and go roped; so if one falls in, the weight of the other two on the rope will haul him out. I have violated this precept and paid for it; and I never knew a climber to violate it and not pay for it—so that guides have come to the point where they say "only a greenhorn or a fool takes chances on mountains."

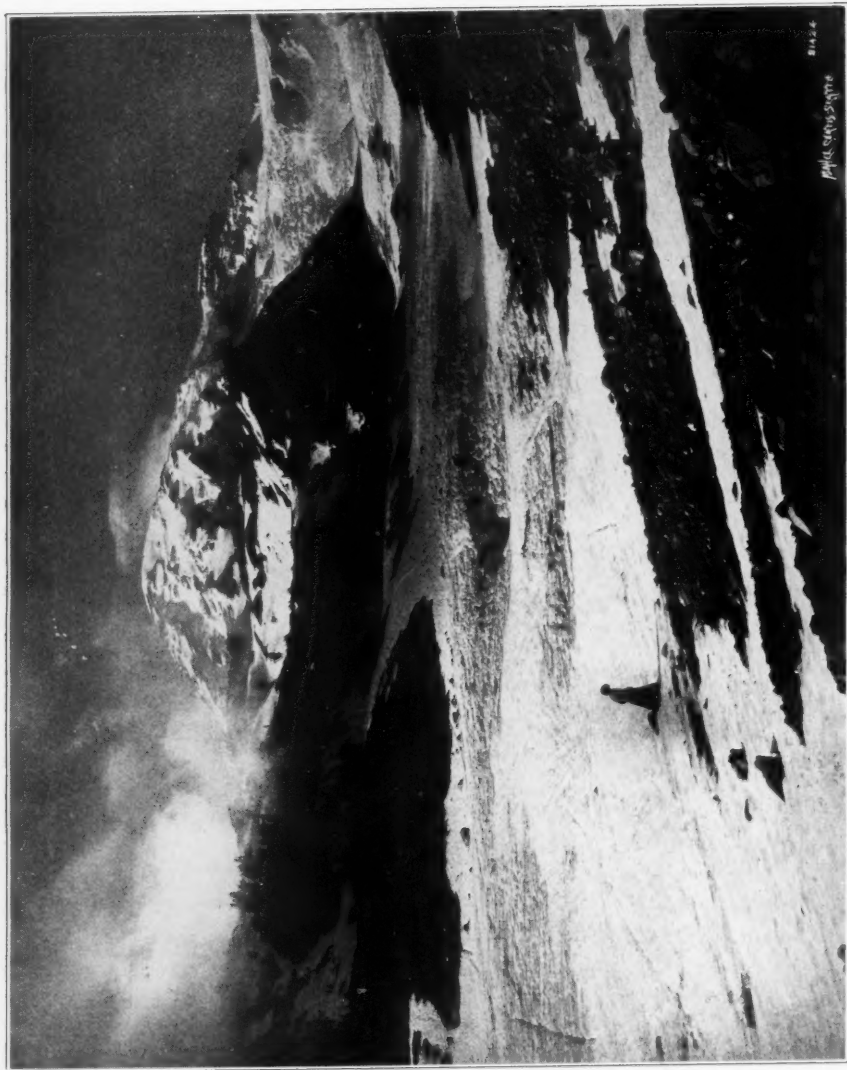
A party of Eastern university men had hired all the guides available but one. Not meaning to go far and taking only a light lunch, I roped up with this guide and set out to see some seracs at Glacier. I love rock climbing and if properly booted never tire of it; but I loathe ice. I cannot think of any reason why I loathe ice and love rocks except that I was brought up in a prairie country where the sidewalks



Courtesy of Canadian Pacific Ry.

GLACIER HOTEL AND STATION.

A SCENE WHICH RIVALS ANYTHING IN SWITZERLAND, ON THE CANADIAN PACIFIC RAILROAD AT GLACIER, BRITISH COLUMBIA. THE VIEW HERE IS MAGNIFICENT. THE MOUNTAINS SEEMINGLY BUT A FEW HUNDRED FEET AWAY ARE IN REALITY MORE THAN TWO MILES. THE ICE FIELD IS THE GREAT ILLECILLEWART GLACIER. TO ITS LEFT TOWERS THE NAKED PYRAMID OF MOUNT SAINT DONALD TO A HEIGHT A MILE AND A QUARTER ABOVE THE RAILROAD.



Courtesy C. M. & St. P. Ry.

ON THE NISQUALLY GLACIER, RAINIER NATIONAL PARK.

PARTIES OFTEN ASCEND THIS GLACIER TO WHAT IS KNOWN AS THE CASCADES, WHERE THE ICE RIVER PLUNGES OVER A STEEP DECLIVITY, BREAKING INTO DEEP CREVASSES. WITH A GUIDE THIS IS NOT AN ESPECIALLY HAZARDOUS TRIP, BUT NO ONE SHOULD VENTURE ON TO THE GLACIER WITHOUT ONE OF THE COMPETENT ACCREDITED GUIDES, FOR THE CREVASSES YAWN WHERE LEAST EXPECTED,—OFTEN COVERED WITH A THIN LAYER OF SNOW WHICH WILL BREAK THROUGH WITH SLIGHT WEIGHT AND ONLY THE EXPERIENCED EYES OF THE TRAINED MOUNTAINEER CAN DETECT THE DANGER.



Courtesy of the C. M. & St. P. Ry.

REFLECTION LAKE AND INDIAN HENRY'S HUNTING GROUND.

THIS IS ONE OF THE MANY FLOWERY SLOPES THAT LIE ON MT. RAINIER BETWEEN THE GREAT GLACIERS, AND CLOSE TO THE SNOW LINE. IN THIS "PAIR," THERE ARE SEVERAL HUNDRED VARIETIES OF ALPINE FLOWERS INCLUDING SOME THAT ARE NOT FOUND ANYWHERE ELSE ON THE MOUNTAIN.



Courtesy of C. M. & St. P. Ry.

ROAD ABOVE NARADA FALLS ON THE WAY TO PARADISE PARK.

THE GOVERNMENT ROAD ASCENDS THE SOUTHERN SLOPE OF THE MOUNTAIN TO PARADISE PARK, ONE OF THE FLOWERY CARPETED "PARSES" CLOSE TO THE SNOW LINE IN MT. RAINIER NATIONAL PARK. HERE FLOWERS BLOOM EVEN AS THE SNOWS ARE MELTING AND WHILE JULY 1ST OFTEN SEES TWENTY FEET DEEP IN "PARADISE," JULY 15TH WILL FIND FLOWERS ALL ABLONG, COVERING THE MEADOW WITH A GORGEOUS FLORAL CARPET.



By Courtesy of the C. M. & St. P. Ry.

MT. RAINIER FROM RICKSEKER'S POINT.

RICKSEKER'S POINT IS A BOLD HEADLAND THAT JUTS OUT ON THE LOWER SLOPE OF THE GREAT MOUNTAIN. THE GOVERNMENT ROAD TO THE SNOW LINE CREEPS AROUND THIS DIZZY HEIGHT—AND LOOKING BACKWARD AS YOU ARE ASCENDING, THE MIGHTY PEAK TOWERS ALMOST OVER YOUR HEAD, WHILE A THOUSAND FEET BELOW THE PARADISE RIVER ROARS ON DOWN ITS NARROW CANYON TO JOIN THE NISQUALLY RIVER, ONE OF THE LARGEST GLACIAL STREAMS OF THIS MOUNTAIN'S WATER COURSES.

were ice four months of the year, and you could not find a rock the size of a base ball. The old guide thought because I climbed rocks well that he could lead me to a path above the ice seracs, cross the snow névé and bring me down a precipice on the other side of the snow field. It entailed a walk of twenty-five miles; but the guide made a mistake. He lost his way down the three mile precipice and to avoid being benighted decided to take me, by glissading, home down the icy bank of the steep glacier. He thought because I could climb rocks well I could slide ice well. Well—I did. I slid so well that to this day I don't know how I didn't carry him 4,000 feet down with me. He had crawled down the precipice to find me foothold. I had stepped from his shoulder to the alpinstock, and from the alpinstock to a niche for foothold, when a bit of icy rock gave way and I shot out to the arm pits above nothing. I don't know how or what my feet found; but I lighted on my feet with a rock slide clattering below me that rumbled and gathered force as it roared below the precipice. Old Jacob came up with a blanched face and took me home over the ice. He would cut a place for his feet, let out the rope, and I would slide till the rope yanked me facing him. Then I would cut a place for my feet and he would slide. It is a point worth noting—in cutting foothold, the Swiss guides always notch in and down—coal scuttle fashion—not in and up, where the feet could slide out. We neither of us missed footing once glissading down; but I fell fifteen times to the second mentally and have hated ice ever since. It was only by a miracle I did not break his and my own neck.

That same week the university men had climbed an unconquered peak. Just as they reached the summit three men unroped and raced to see who should have the honor of placing a flag on the peak first. Snow sagged ominously over a hidden crevasse. A little light man skipped across the bridge of snow in safety. A big Chicago man came next. The snow sagged and sank. His companions saw the snow bridge fold in the middle; and the last thing

seen of the Chicago man was his heels. They looked down the icy blue crevasse. He was wedged shoulders down insensible. An unmarried man volunteered to go down after him. They let him down on the rope. The insensible man was wedged so tightly they almost dislocated his arm pulling him out—the moral of which is, never unrope on snow or ice; and always go at least three on a rope. The only death among mountain climbers in the Canadian Rockies occurred through unroping at the last lap of a climb.

For this kind of climbing, one, of course, must go to Northern Mountains; but you can enjoy sheer height and blizzards, too, far South as Colorado, and in balmy climes as California if you go high enough. People have asked why I like mountain climbing. It is not the dare deviltry of it—it is the conquering spiritual and physical that adds zest to the joy. In these Northern mountains, too, one finds the best of trout fishing and boating.

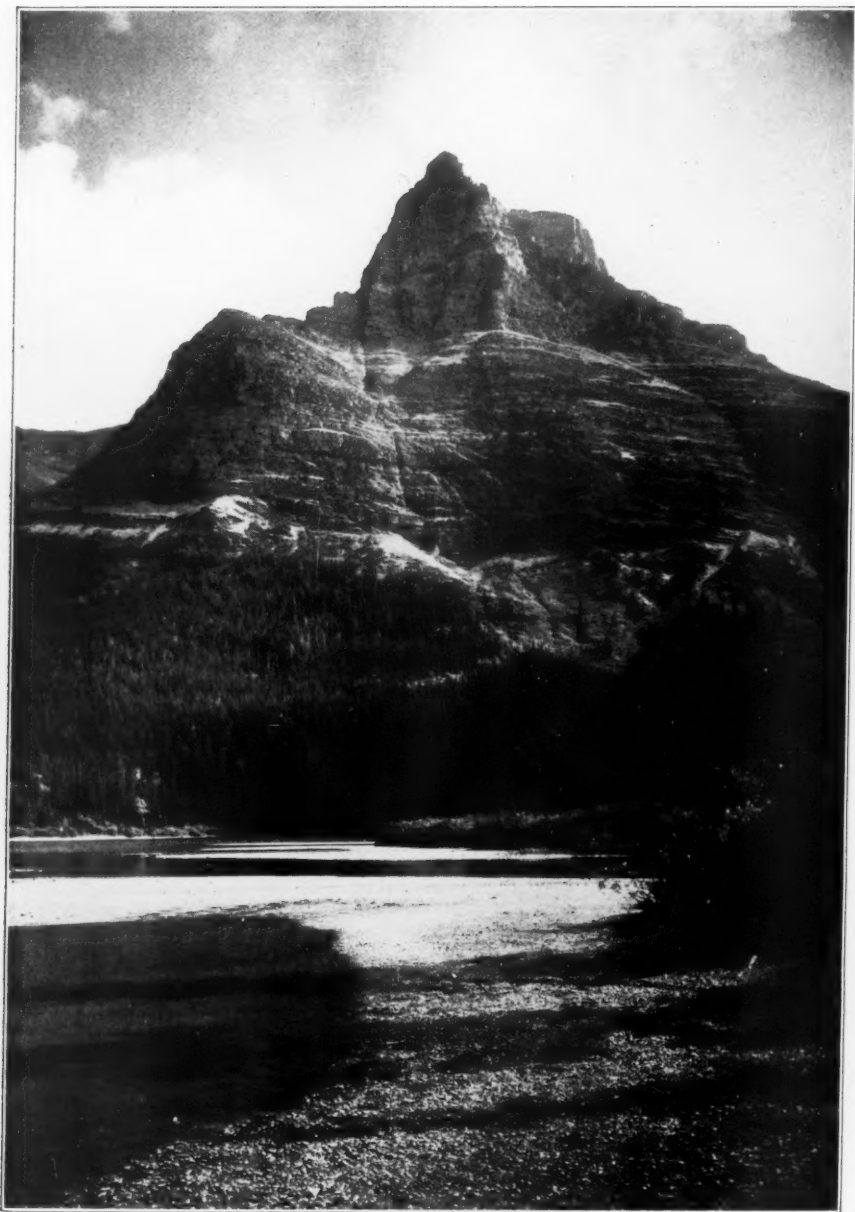
Though my first mountaineering was done in the North, my last has been done in the South; and I confess it is hard to say which is the more fascinating. There is a marvel of color; there is a mysticism as of the soul; there is a peace as of God in the Desert just as there are a grandeur and a robust zest in the North. You don't need to climb mountains in the North unless you want to; and you can see the Desert from a motor car and a palatial hotel if you want to; but there is a better way. Both North and South, you can never feel the wild toss of the unleashed winds, the mystic touch of midnight under stars in Alpine meadows, the secret, furtive, almost fairy, message of the shy mountain flowers—unless you go out and camp far from motor road and hotel luxury. In the Painted Desert I have driven fifteen miles through the lilac bloom of sage brush high as the hubs of the wheels; and I have stopped on the edge of some precipice to make myself realize that the shifting, shimmering panorama of landscape painted in fire below was a fact, not the misty mirage of some dream. Color, color that defies pigments and words, moun-



Copyright by Kiser Photo. Co. for Great Northern Ry.

McDERMOTT FALLS AND GRINNELL MOUNTAIN.

A PORTION OF MANY GLACIER CAMP ON LAKE McDERMOTT IS SEEN IN THE IMMEDIATE FOREGROUND. THE MOUNTAIN, WHICH HAS AN ELEVATION OF 8835 FEET, IS NAMED AFTER GEO. BIRD GRINNELL OF NEW YORK.



Copyright by Kiser Photo. Co. for Great Northern Ry.

RED EAGLE MOUNTAIN FROM HEAD OF ST. MARY'S LAKE.

THIS MAJESTIC MOUNTAIN WAS NAMED AFTER CHIEF RED EAGLE (MACHT-OH-CHEE-PEE-TOW) OF THE BLACKFOOT TRIBE. THE LAKE WAS NAMED ST. MARY AFTER THE CATHOLIC ST. MARY, BY OLD HUGH MUNROE, MANY YEARS AGO.

tains blood red with peaks of fire, scene shifted as if by the gods of some great amphitheatre—these are the characteristics of the Painted Desert and Grand Canyon.

The South is, perhaps, the better region for invalids and those who must have a quiet holiday. Don't imagine the Desert is a thing of sand dunes and red mountains. It is that and more. Grand Canyon is 200 miles long. In it lie ranges high as the Canadian Rockies and a river tempestuous as the Columbia. The Desert, too, has its mountains, and its areas of petrified forests—huge sequoias turned to agate and onyx by the centuries' wash—and its prehistoric cities and caves. At the 7,000 foot level in the Desert are the yellow pine forests—God's own hand-made parks, clear of under brush as a garden, tall, towering trees all free of under branching, literally surcharging the atmosphere with steam of resin. This resin atmosphere is of itself sheer healing to weak lungs, though a care must be taken of the altitude for weak hearts.

How to do it—that is the point! Fare West and back by train is much the same as fare across the ocean and back. If you want to see the mountains at closer range than through hotel windows, how are you to do it?

Forest supervisors can send you to little inns higher up the mountains, where you can live at \$1 to \$2 a day. Local outfitters will supply you with tent and camp outfit and horses for

\$4 to \$5 a day; or if you buy your own horse and tent, you can cater for yourself; and this runs about \$10 each a month, if you have a careful cook.

Two or three points should be emphasized:

Do not go into the Desert without a guide; for the Desert is more dangerous than a glacier. A dust storm may wipe out all sign of trail; and lack of water is more perilous than ice or snow.

In the heavy forests of the North do not venture new ground without a guide. You may think you can keep the compass, or find your way out by following sunlight and stream. What if a fog shut out sunlight, and the stream loses itself in a gorge you can't follow? What if you break your leg? I have known of mountaineers, who do not tell about it, reduced to killing their horses for food in such emergencies; and pleasure seekers do not go out seeking emergencies.

Two more points: dress warmly; for the nights are cold even in the Desert. Dress very warmly. Next—officers say that an army is just as efficient as, and no more efficient than, its feet. To enjoy roughing it, you must have boots strong in the ankle, thick and pliable in the sole, boxed enough in the toe to protect the sides of the foot from bruises. Go to the wilds warmly dressed and comfortably shod; and nature will do the rest with distilled sunbeams and ozone and winds sent down from the zenith of heaven!

Fire Losses Small

Although there were an unusual number of forest fires on the national forests of Oregon and Washington this year, the loss of merchantable timber has been relatively small.

Wood for Aeroplane Propellers

The propellers of aeroplanes such as are used in the present European war may be made of selected ash, which is both strong and light and will not split under vibration or shock, or of built-up layers of spruce with mahogany centers. The framework of the machines, too, is generally made of wood, spruce being much used on account of its straight grain and freedom from defects.

For Wood Preservation

A surprisingly large number of substances, ranging all the way from the condensed fumes of smelters to the skimmed milk of creameries, have been tried or suggested as means of preserving wood from decay. Most of them, however, have been found to have little or no value for the purpose. Certain forms of coal-tar creosote and zinc chloride are the most widely used wood preservatives.

FORESTERS IN THE GREAT WAR*

By SAMUEL T. DANA

SOME 40,000 foresters are now, in all likelihood, fighting on the battle fields of Europe. Probably no other profession, aside from the regular officers in the army and navy, has so large a proportion of its members engaged in the struggle, nor will any other profession pay such a heavy toll in men.

It seems to be the irony of fate, one of the many inconsistencies of war, that men who are engaged in one of the most peaceful of professions, whose daily life is spent in the woods and mountains in the protection of the forests and of its wild life, should be among the first to find themselves suddenly involved in a deadly combat, the main object of which is destruction. Yet in Europe there has always been an intimate relation between the forest service and the military service. In the early history of the profession foresters were almost universally appointed from those who had been army officers and soldiers on the theory that their physical constitution and training particularly fitted them for the work; now the case is in part reversed, and foresters are drawn upon, when need arises, to swell the ranks of the army.

Obviously the life of a forester fits him pre-eminently for military service. Out of doors the greater part of the time, he must be physically fit, possessed of a strong constitution, and ready at any time to undergo exposures and hardships that would be beyond the endurance of the ordinary city dweller. Candidates for the forest service in the various European countries must, in fact, measure up to the physical standards that are required for the military service. Furthermore, the very nature of the forester's work is such as to make him sturdy and self-reliant, accustomed to handle a gun, and ready for any

emergency. Moreover, in most of the European countries the lower grades of forest officers are recruited largely from men who have served their time in the army, and this training, together with the semi-military organization which generally prevails, gives them the discipline so necessary in the efficient soldier.



RUSSIAN FOREST OFFICER.

NOTE HOW SIMILAR THIS UNIFORM IS TO THE REGULAR MILITARY UNIFORM OF RUSSIAN ARMY OFFICERS.

* For much of the information contained in this article, the author is indebted to Mr. Raphael Zon and to Dr. B. E. Fernow.



VIEW OF PART OF THE CITY OF NANCY.

NEAR NANCY THERE HAS BEEN ALMOST CONTINUOUS FIGHTING SINCE THE BEGINNING OF THE WAR. AT THE LEFT OF THE PICTURE ARE SHOWN THE GARDEN AND BUILDINGS OF THE FOREST SCHOOL, THE ONLY SCHOOL IN FRANCE FOR THE TRAINING OF TECHNICAL FORESTERS. THE NAMES INDICATING ITS LOCATION WERE WRITTEN ON THE PHOTOGRAPH BY PROF. HENRY, ASSISTANT DIRECTOR OF THE SCHOOL.

The importance in warfare of all these qualities can hardly be exaggerated. Modern war is not, as the present titanic struggle has proved, entirely a question of heavy guns. The man behind the gun is still the most important factor, and it is mainly upon the physical hardihood, the moral stamina, and the enduring powers of the men on the firing line and in the trenches that the final outcome will depend. It is, therefore, perfectly natural that foresters, who possess all of these qualifications in a peculiar degree, should be looked upon by the military experts as too good material not to be put to use in time of need.

The military qualifications of foresters have been especially recognized in France—notably since the Franco-Prussian war of 1870. Previous to the establishment of the forest school at Nancy in 1825, most of the higher forest officials were appointed from retired army officers, but up to the time of the Franco-Prussian war the personnel of the forest administration

did not form a part of the regular army. Events in that war, however, proved conclusively what valuable military service could be rendered by foresters. The subordinate forest officials everywhere voluntarily offered their services and acted effectively as guides and as bearers of despatches between the lines of investment at Strassburg, Metz, Sedan, and Paris. After the first disasters to the French arms, the higher forest officials, unanimously offered to assist in the organization of new corps, and some even joined the ranks of the active army before the mobilization of the new troops could be effected. In a letter of June 30, 1871, to the Minister of Finance, General Cambriels gave the highest praise to the foresters who had served in the war, stating that they had given such striking proof of their courage, patriotism, devotion to duty, and disinterested self-sacrifice as to command the respect and admiration of all.

As a result of the Franco-Prussian war, therefore, a law passed on July 27, 1872, made all forest officers a part of the army, subjected them to military law, and placed them at the disposal of the Minister of War or the Minister of the Navy. In accordance with this

and companies, which formed a part of the regular military force of the nation, both in France and in Algeria. In order to fit the higher grades of foresters to perform efficiently their duties as army officers, an officer from the army was detailed by the Minister of War to the forest school at Nancy to give military instruction. When called to military service, the various higher forest officials assume the following ranks in the army:—

Conservator (*conservateur*)—Lieutenant Colonel.

Inspector (*inspecteur*)—Major.

Assistant inspector (*inspecteur adjoint*)—Captain.

Technical assistant (*garde général*)—Lieutenant.

Probationary technical assistant (*garde général stagiaire*)—Sub-lieutenant.

The conservators and inspectors serve in their military grades only as staff officers, or in the quartermaster's department, or on special missions; while the assistant inspectors and technical assistants may serve either as staff officers or as infantry officers in direct charge of companies or sections. The non-commissioned officers of the forest light infantry (*chasseurs forestiers*) are chosen from among the rangers (*brigadiers*) and sometimes the guards (*gardes*). Guards who receive no appointment as subordinate officers are ranked as soldiers of the first class.

For military purposes the forest officers are divided into two classes—(1) those assigned to the defense of the fortresses within their districts, and (2) those assigned to the various sections and companies of the active army. Undoubtedly in the present war the foresters included in the first class have been doing their part in the



JUDEICH, A GERMAN FORESTER.

THIS PICTURE OF ONE OF GERMANY'S MOST FAMOUS FORESTERS, LOOKS MORE LIKE THAT OF AN ARMY OFFICER OF HIGH RANK THAN THE AMERICAN CONCEPTION OF A FORESTER. JUDEICH WAS AT ONE TIME DIRECTOR OF THE AUSTRIAN FOREST SCHOOL AT WEISWASSER AND LATER OF THE GERMAN FOREST SCHOOL AT THARANDT.

law a decree of April 2, 1875, with various subsequent modifications, created the military corps of forest light infantry (*chasseurs forestiers*). This decree organized the various higher and lower forest officials into sections

defense of the fortifications in the war zone, while those in the second class have probably been used largely for reconnaissance work. This work, which has been steadily increasing in importance and difficulty, is one which foresters are especially qualified to perform, and in connection with it they have undoubtedly rendered valuable service as guides and scouts.

Germany, Austria-Hungary, and Russia have not gone so far as France in making the forest organization an integral part of the army. In Germany the bulk of the higher forest officers are merely subject to the compulsory service which may be required of all able-bodied citizens in accordance with the general military laws. Some of these higher officers do, however, voluntarily become a part of the army as guides or couriers (*feldjäger*). In Prussia the "*feldjägerkorps*" consists of about seventy-five forest officers who receive the same education as other foresters but in addition have military organization and are from time to time assigned to duty in Berlin. The origin of this

corps dates from the time of Frederick the Great, who conceived that foresters could find their way through the wilds better than any other men. In times of peace the members of the corps are still used for such duties as transferring despatches between the different courts.

The lower forest officers, on the other hand, are much more closely connected with the army through the organization of special "*jägerbattalions*." Foresters belonging to these battalions owe not only the usual military service required of every one, but are subject to certain special military obligations. Candidates for the lower grades in the forest service, after serving an apprenticeship in forestry work and undergoing from one to three years of military training, must pass an examination known as "*jägerprüfung*." If successful in this they are recommended for appointment in one of the "*jägerbattalions*," which are organized as part of the regular army. In connection with their military service they are specially trained as sharpshooters and also receive instruction in forestry from competent fores-



AUSTRIAN FOREST SCHOOL STUDENTS.

NOTE PARTICULARLY IN THIS GROUP THE MILITARY UNIFORMS AND THE GENERALLY SOLDIER LIKE APPEARANCE OF THE STUDENTS.

ters. After several years of service in this corps, during part of which time they may be granted leave of absence in order to take part in actual forestry work, they are eligible for appointment to the forest service. The object of this training is evidently to secure men of good physique and of certain moral and intellectual attainment for the



A RUSSIAN COSSACK.

NOTE HOW CLOSELY HIS UNIFORM RESEMBLES THAT OF THE FOREST OFFICERS.

forest service, and at the same time to make them available for military service.

In Russia both the upper and lower grades of forest officers were for many years recruited directly from the military service. In 1837 the first technical forestry education in the country was

given as a part of the training at a regular military school. In 1867, however, the forest service began to be transformed from a military to a civil organization, and since that time the higher officers, at least, have as a rule not been men trained primarily for military service. The lower officers, such as guards, however, are still recruited as far as possible from those who have already passed the military service to which all able-bodied citizens are liable, and particularly from those who have served as non-commissioned officers.

While it is impossible to state exactly how many men are included in the State forest services of the warring countries, a rough estimate of their total number is as follows:

	Higher Grades	Lower Grades	Total
Russia.....	3,500	31,000	34,500
Germany.....	1,500	7,800	9,300
Austria-Hungary	1,000	6,600	7,600
France.....	700	3,800	4,500

France also has some 600 forest officers in its province of Algeria, many of whom are undoubtedly engaged in the war. Belgium, with only 450,000 acres of State and communal forests, has only about 150 foresters in its State service. In Serbia and Turkey forestry has not as yet been developed to any extent, and the number of men employed is undoubtedly very small. England itself has practically no State forests and only a few foresters in private employ. In British India, however, a large force is employed for the handling of the 149,000,000 acres under the management of the forest department. Canada also has a moderately large and steadily growing forest force, and foresters from both of these countries are certainly fighting for their mother country.

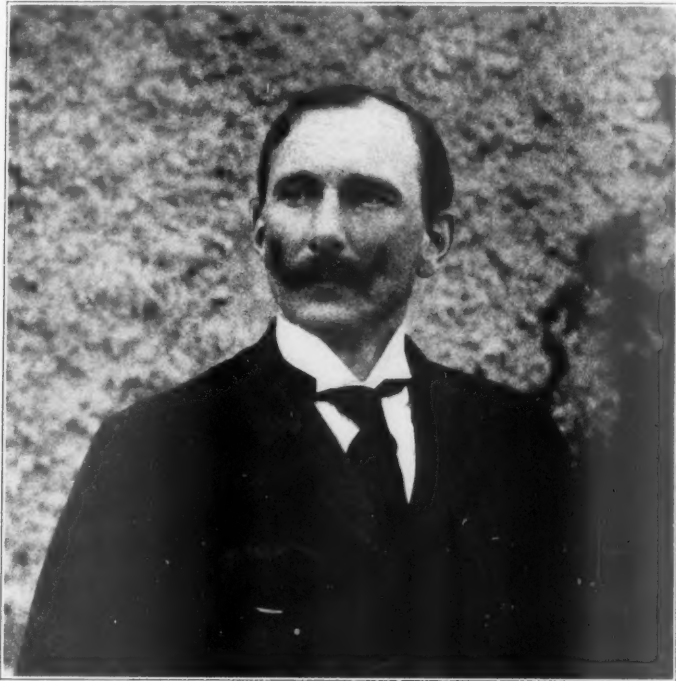
In round numbers, then, there are probably in the neighborhood of from 55,000 to 60,000 foresters employed by the Governments of the various countries and their provinces engaged in the present war. Of these it can safely be assumed that from two-thirds to

three-fourths, or some 40,000 men, are actually taking part in the fighting. It must also be remembered that there are a very considerable number of foresters in private employ, many of whom must also be involved.

The fate of many European foresters now fighting for their respective countries will be watched with the keenest interest by foresters in the United States. The connection between the forestry profession in the Old World and the New has always been a close one, and many of the men who have been instrumental in shaping the forest policy and introducing the methods of forest management now practiced in this country, such as B. E. Fernow, Gifford Pinchot, Henry S. Graves, Overton W. Price, and Filbert Roth, received their forestry education in Europe. Recently American foresters have been

visiting Europe in constantly increasing numbers, and have formed personal acquaintances with their professional brethren on the other side of the water, many of whom are now undoubtedly with the various armies.

Of all the foresters engaged in the war, Americans are undoubtedly most interested in Dr. C. A. Schenck, who has for many years been a reserve Lieutenant in the Light Artillery of the Grand Duchy of Hesse-Darmstadt, and concerning whose fate rumor has already been busy. Coming to the United States twenty years ago to succeed Gifford Pinchot as forester to the Biltmore estate of George W. Vanderbilt, at Asheville, N. C., Dr. Schenck's brilliance and thorough knowledge of forestry soon made him one of the prominent men in the profession. The Biltmore Forest School, which he estab-



DR. C. A. SCHENCK.

THE HEAD OF THE RECENTLY DISBANDED BILTMORE FOREST SCHOOL, WHO WAS POPULARLY KNOWN IN THE WORDS OF A SONG WRITTEN BY ONE OF HIS BILTMORE STUDENTS AS "THE MAN WHO LOOKS LIKE THE KAISER." DR. SCHENCK HAS BEEN FOR MANY YEARS AN OFFICER IN THE GERMAN ARMY.



RUSSIAN FOREST GUARD.

NOTE THE UNIFORM AND THE CONSPICUOUS BADGE AS WELL AS THE ARRAY OF TOOLS IN GENERAL USE BY FORESTERS IN RUSSIA FOR FOREST PLANTING.

lished in 1898, was almost the first forest school to be founded in this country, and throughout its existence remained a unique institution. Nearly a year ago, however, feeling that the school was not filling the place which he had always hoped it might, he decided to discontinue it and to return for good to his old home in Darmstadt. From his first arrival in this country Dr. Schenck's virile personality made itself strongly felt, and his loss would be sincerely mourned by foresters and lumbermen generally should he fall a sacrifice in the present war.

Reports of individuals who have been killed in battle are naturally slow in reaching this country, but on November 13 a brief news despatch announced the death of Professor Fricke, one of the foremost German foresters and for several years past director of the forest

academy at Münden, where Dr. Fernow, now Dean of the Faculty of Forestry at the University of Toronto, studied forestry. Prof. Fricke has been a frequent writer on mensuration and silviculture, and is probably best known in this country because of his efforts to show that tolerance is sometimes, at least, as much a matter of available moisture as of available light. His investigations of this subject not only aroused European foresters to the necessity of looking down as well as up in their studies of tree development, but did much to give a new direction to investigations along this line in this country.

While American foresters have lately acquired a better understanding of the scientific work of Russian foresters, and have even formed ties of friendship with those who have visited this country,



FRENCH FOREST RANGER AND HIS WIFE.

THE MILITARY APPEARANCE OF THE COAT IS AT ONCE APPARENT. IT IS BUT SLIGHTLY DIFFERENT FROM THE UNIFORM OF THE FRENCH MILITARY OFFICERS OF MINOR RANK. THE HOUSE IN THE BACKGROUND IS OWNED BY THE GOVERNMENT AND IS A TYPICAL FRENCH RANGER STATION.

the many exemptions from military service granted to educated persons in Russia make it difficult to state definitely who of them are now at the front. There is no doubt, however, that many foresters are in active service for their country.

Another German forester who in all probability is involved in the strife is Prof. Fabricius, a comparatively young man who has been in charge of the work in silviculture in the forest school at Munich since the death a few years ago of Prof. Mayr, under whom many American foresters have studied.

Among the prominent French foresters who are placed at the disposition of the Minister of War as members of the "chasseurs forestiers," and who are therefore undoubtedly involved in the war, are Cuif, Jacquot, and Cardot. Cuif is associated as a professor with Jolyet at the forest school at Nancy, where they are in charge of the research

and experimental work. Nancy has been one of the main storm centers since the beginning of the present war, so that any French foresters who have been involved in the operations in its vicinity have been fighting for their school as well as their country. Gifford Pinchot first undertook the study of forestry at this school, which has since been visited also by other American foresters. Jacquot is best known to foresters in this country as the author of an exhaustive book on the valuation of forest fire damages (*Incendies en Forêt*) which was awarded a gold medal. Cardot has written extensively on forest influences and the reclamation of denuded mountain lands, and has also done much to arouse public interest in forest preservation by the publication of a popularly written, attractively illustrated book known as "*L'Arbre*."



GROUP OF FORESTRY STUDENTS.

THESE MEN ARE FROM THE FOREST ACADEMY AT MÜNDE, OF WHICH PROF. FRICKE WAS DIRECTOR.

Among the Austrian foresters who are probably with the army may be mentioned Prof. Zederbauer, who is in charge of the silvicultural investigations at the Mariabrunn Experiment Station. Zederbauer has written widely on silviculture in many of its phases, but is best known in this country for his interesting investigations regarding the light requirements of trees and methods of measuring light in the forest.

In conclusion it is interesting to speculate a little as to the effect which the war will probably have on the future development of European forestry. Many forests will undoubtedly be seriously injured and even destroyed, working plans will have to be revised, and opportunities will be offered for the introduction of new silvicultural systems and methods of forest management.

Perhaps of even greater importance, however, will be the heavy thinning which will take place in the ranks of the foresters. Strange as it may seem, this loss will probably in some respects be particularly serious in Russia. There the proportion of forest officers in the higher grades to those in the lower grades is only about half what it is in Germany, Austria-Hungary, and France. The death of any considerable number of the higher officers, therefore, will decrease the comparatively small number of leaders in the profession. In the other countries, on the other hand, both the higher and lower grades are overcrowded, and there are more men ready for service than there are positions to fill. The war will therefore make room for many men who would other-

wise have no chance to attain positions of responsibility. Deplorable as is the destruction of forests and foresters which the war will cause, there is, however, hope that some good may come in the long run. The introduction of

new blood which will be necessary, and the opportunity for original work in repairing the damage to the forests, may be expected to give a new stimulus to the profession in which at present practice lags behind theory.

THE NATIONAL FOREST ADMINISTRATION*

By DAVID F. HOUSTON, *Secretary of Agriculture*

[A change in administering the national forests in undeveloped sections is recommended by Secretary of Agriculture Houston in his annual report, so that they will yield, at once, revenue that can be applied to local development and thereby further assist settlers and inspire settlements. This plan is for Congress to provide money in advance for local improvement, especially road construction, and charge this against a county's share of timber sales when the timber is sold by the government. The Secretary's recommendations are in part given in the following extracts from his report—Editor.]

“IN regions where timber is the chief income-producing resource absence of demand for it often works a serious hardship upon those who have entered the region as the advance guard of civilization and are seeking, in the face of many difficulties, to establish homes. There are counties in which a sparse local population of pioneer settlers find themselves surrounded by a wilderness largely consisting of national forest land, which is almost idle so far as any form of present use is concerned. In other words, a great, if not the greatest, of the potential sources of wealth in such counties, held in trust by the Government for the benefit of the public, not merely contributes nothing now to the upbuilding of the communities which will give value to the forests, but actually adds to the burden which these communities must assume. Were the forests private property they would pay their fair proportion of the cost of road development, public schools, and other public activities, through taxation. The Government, unlike the private owner of timberland in such regions, is holding the timber, not in order to make a profit later by its advance in value, but in order to make it promote the public welfare. That it should be made to serve the local as well as the national public welfare has been definitely recog-

nized in the provisions of law for the use of 35% of all gross receipts from the forests for local public purposes.

“To carry more fully into effect this already established principle a further step should be taken. It should not be necessary to wait until the period of hardest struggle is past before these public resources begin to assist local development. Before the national forests begin to yield large incomes, as well as after, they should be made to participate in the work of building up the country and giving value to all its resources.

“The first need of the public in undeveloped regions is for more and better roads. Without them the struggle of individuals to gain a foothold is much more difficult, while isolation from neighbors and the outside world means meager educational opportunity, a lack of comforts, and conditions unfavorable to community life. A road system, however, constitutes a capital investment which a handful of settlers must make a little at a time. When their roads must be built largely through national forest lands, which pay no taxes, their case is much more difficult. In such regions the Secretary of Agriculture should be authorized to make a study of the local conditions and to gather all the data necessary to formu-

* From the annual report of Hon. David F. Houston, Secretary of Agriculture.

late a plan for public-road development based on local needs. These plans should be carried into sufficient detail to provide a reasonably accurate estimate of the cost of the road construction which it is proposed that the Government shall undertake. They should be accompanied by careful and conservative appraisals of the value of the national forest timber in each locality and a forecast of the future income which the forests will bring in from all sources. On the basis of the showings of fact regarding the value of the Government's property, its potential income-yielding capacity, and the needs of the public, Congress should be asked to appropriate for the construction of specific projects recommended by the Secretary of Agriculture. The cost of such road construction by the Government should constitute an advance of the amounts which the forests would later make available for local use. In effect, therefore, the roads would become an obligation upon the forests, to be extinguished as their resources come into commercial demand."

EXCHANGES OF LAND WITH STATES

The Secretary then recommends changes in the system of homesteading, and suggests the wisdom of releasing certain parts of the forests by exchange of property with the States, as follows:

"An important part of the forest problem is to get the right line drawn between farm and forest. Under private ownership considerations enter which do not always lead to the best use of the land. On the national forests the question is determined by a careful study of what the land is best fitted to produce and what the public most needs. Agricultural development is provided for either by excluding from the forests land chiefly valuable for other than forest purposes or by listing land for settlement under the forest homestead act. The work is carried out through land classification, which was aggressively pushed last year. The elimination made or determined upon totaled over 2,000,000 acres, while systematic classification was conducted on 100 of the forests, and over 280,000 acres of

land were listed for settlement under the forest homestead law. The area in the forests at the close of the year, exclusive of land not the property of the Government, was slightly over 165,000,000 acres.

"There is need for similar classification work outside of the national forests wherever the public domain is timbered. There are still many areas which should be added to the forests. Wherever the land will have largest permanent value through use for forest production it should be held in public ownership. Timbered portions of the public domain are now unprotected against fire and trespass and are often a source of danger to adjacent lands. Under existing law the President has in the seven States of California, Oregon, Washington, Idaho, Montana, Colorado, and Wyoming no authority to add such lands to the present national forests. Legislative provision should be made for applying the classification principles in these States.

"There is also need for legislation to permit the consolidation of national forest holdings through land exchanges with States and private owners. Some of the forests contain a great deal of land which was acquired from the Government before the forests were established. Exchanges of land on the basis of equal values would be very advantageous to the Government, since the cost of administration and protection would be materially reduced."

TIMBER SALES

The report outlines the policy of the department regarding timber sales in the national forests as follows:

"In its handling of timber sales on the national forests the department is confronted with a situation radically different from that which obtains with respect to the grazing. While almost all the range on the forests is in demand, most of the timber is not. To a large extent development work here means so handling the timber that it will be an important factor in opening up the country. Wherever and whenever general business and market conditions make it possible to sell large bodies of now inaccessible timber, the aim is to

offer the timber on terms which will tend to increase transportation facilities, promote settlement, and build up permanent communities. Where timber can be sold the benefits of Government management of the forests as public resources are apparent now. Where, however, the timber is not in present demand a difficult situation sometimes exists.

"It has been urged that, with the vast supplies of virgin national forest timber, the Government should greatly increase its sales by lowering the price asked for stumpage. To the extent that such a course had any effect at all it would be, in the long run, an effect unfavorable to the public interest. Upon the greater part of the timber it would have no effect, because no manufacturer could, under present conditions, afford to cut the timber at any price. Where timber is thus not in demand because still inaccessible, as a rule the possibility of marketing it depends on the advent of a period of greater activity in the general lumber trade. When, as at the present time, lumbermen are forced by general market conditions to curtail output, the department can not expect to make many large sales. Nevertheless, it is wise even in such times not to cease offering large bodies of timber on terms which may attract purchasers, and this is being done. At the same time all

possible effort is given to develop small sales for the supply of local needs, and sales to industries which require wood for special purposes, since sales of this character provide a fairly steady market for national forest stumpage, even when the general market is depressed. In a word, the timber-sale policy, no less than the grazing-regulation policy, aims to make the resource serviceable to the public now, as well as in the future, in the fullest degree which scientific production and utilization can make possible."

In the section dealing with forestry the Secretary also points out that the forests have passed through an unusually dry and dangerous summer without serious fire damage. He indicates that the present emergency fund of \$100,000 for fire protection of one billion of dollars of public property is inadequate even in ordinary seasons. In discussing the recreational use of the forests, which he holds to be the chief of their secondary uses, he urges that the department should be enabled to grant term leases to persons wishing to use the land for summer homes or hotels. He also emphasizes the importance of protecting the watersheds in the forests, so that the water supply of the 1,200 communities supplied from this source may not be polluted.

THE ANNUAL MEETING

The annual meeting of the American Forestry Association will be held on Monday, January 11, in New York City at the headquarters of the Merchants Association of New York, Woolworth Building, 233 Broadway.

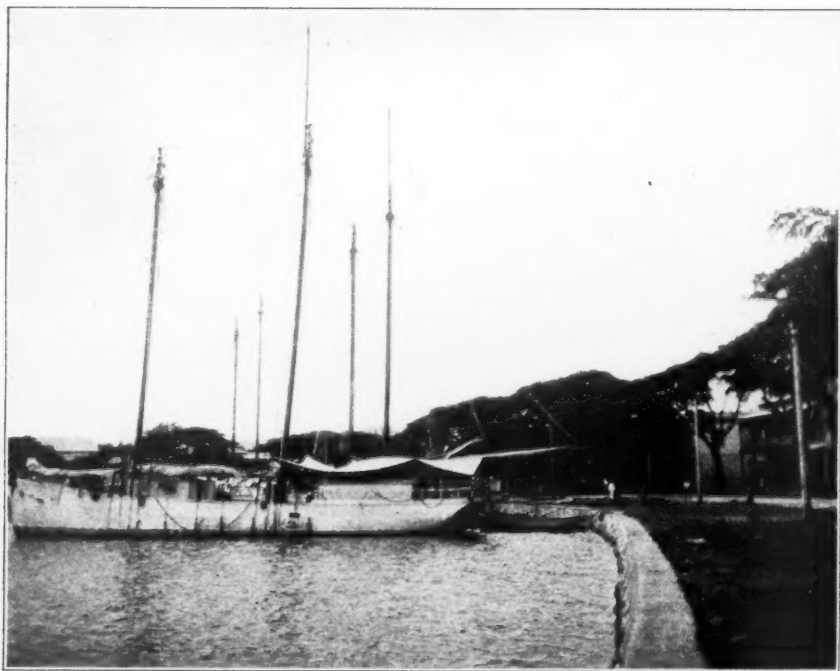
The sessions will be at 10 a. m.; 2 p. m., and 7 p. m.

This is a departure from the usual custom of holding the meeting in Washington, D. C., the change being made because New York is more accessible to the many thousand New England, New York, Pennsylvania and New Jersey members than is Washington, and because members of the Society of American Foresters and of the Society of Eastern Foresters will assemble in New York on the same day.

The meeting will consist of a series of addresses and discussions on what the American Forestry Association can do to aid during the coming year in national, state and private forestry and in encouraging the use of forests for recreation. There will also be discussion of measures for aiding by careful investigations of conditions affecting them, and otherwise, the lumbermen, timberland owners and pulp and paper interests. It is proposed to make the meeting an eminently practical one, one at which the addresses and discussions will be of great service in outlining the important work of the Association for the coming year.

The complete program will be announced in the January American Forestry Magazine.

Members of the Association and their friends are requested to attend and to participate in the discussions.



TRADING SCHOONERS ON THE BEACH AT PAPEETE.

THIS WAS THE TOWN ON TAHITI ISLAND WHICH WAS ON SEPT. 22 SHELLED BY THE GERMAN CRUISERS GNEISENAU AND SCHARNHORST. THE 4000 RESIDENTS FLED TO THE HILLS.

TAHITI

By E. T. ALLEN

SHORTLY after day break, September 22, the German cruisers Scharnhorst and Gneisenau appeared outside the coral reef that guards the little palm-fringed harbor of Papeete. An hour or two later they steamed away, leaving only smoking ruins to mark what had been the main portion of the romantic South Sea capital immortalized by Melville, Loti, Stoddard, Stevenson and a score of lesser writers. Unfortified and undefended, except for a handful of men kept for island police duty, sleepy picturesque Tahiti found her isolation and innocence no safeguards against a world war. The port's native population of 4,000 was driven terrified to the hills. As it was the trading center as well as the

capital, of French Oceania, and the bombardment destroyed stores and warehouses, whole archipelagoes were left stricken and in want.

Since this episode aroused mutterings throughout the world because all the allies' navies were apparently unable to protect defenceless ports against three or four roving and merciless German warships, the name of remote Tahiti has met more eyes than since "Otaheite" was first described by enthusiastic voyagers nearly 150 years ago.

Tahiti, the largest island of the Society Group and by many travelers believed the most beautiful in any sea, lies nearly south of Hawaii and about 17 degrees south of the equator. First touched by Portuguese and Spanish



TANTERA, NEAR STEVENSON'S HOME

STEVENSON LOVED THE BEAUTY OF THIS PLACE AND HIS DESCRIPTIONS, WONDERFUL AS THEY ARE, FAIL TO DO IT JUSTICE, BUT FAIL ONLY, BECAUSE NO WORDS OF TONGUE OR PEN COULD ADEQUATELY DESCRIBE IT. BOUGAINVILLE, A FAMOUS FRENCHMAN, SAID OF IT, "I THOUGHT I WAS WALKING IN THE GARDEN OF EDEN."

navigators, it was described to Europe by Wallis (1767) and Bougainville (1768). They gave such a lively account of the beauty of both island and people, and of what they considered the idyllic perfection of its semi-wild, semi-developed society, that much was written, especially in philosophical France, to argue that here was proof of the necessity for return to nature by the human race.

Bougainville named it New Cytherea. His companion, the naturalist Commerçon, called it Utopia and wrote extravagantly of the virtues which he said flourished because the natives had no conventional restraint. Diderot wrote imaginary dialogues between Tahitian philosophers and ship's chaplains, proving the immorality of marriage. In England, Hawkesworth embroidered Wallis' reports of the newly-discovered Paradise until Horace Walpole denounced him for his sentimentality. By

some authorities it is believed that these early reports of the remarkable island, corroborating the theories of Rousseau, actually influenced the French Revolution and thus all Europe.

Cook's and Forster's visits soon followed (1769 to 1774), bringing fuller information, and in 1788 England sent Lieutenant Bligh in the *Bounty* to get bread-fruit for introduction into her tropical colonies. How his crew mutinied later, put back to Tahiti, sailed from there again with a party of native men and women, and disappeared from the world until found long after on Pitcairn Island where they founded an isolated colony that exists today, is perhaps better known than any other episode in Polynesian history. On the whole, England seems to have been more skeptical than France concerning Tahitian manners, for her next step was to send missionaries to improve them.



A MOUNTAIN STREAM.

A TYPICAL SCENE IN TAHITI OF THE SOCIETY ISLANDS GROUP IN THE SOUTHERN PACIFIC, OWNED BY THE FRENCH AND RECENTLY BOMBARDED BY THE GERMAN CRUISERS. NOTE THE EXTREMELY HEAVY VEGETATION.



COCONUT TREES ON TAHITI ISLAND.

COPRA, WHICH IS A DRIED COCONUT MEAT FROM WHICH AN OIL IS EXPRESSED THAT HAS COUNTLESS USES FOR SOAPS, COSMETICS AND FOOD PRODUCTS, IS THE CHIEF SOUTH SEA ISLAND COMMODITY.

The social system of Tahiti and neighboring islands of the Society Group, which Europe first lauded and later destroyed, was a peculiar one and by no means wholly barbarous. It was very similar to that of Europe in the Middle Ages. There was no king, but each district or chiefery had an independent ruler who inherited under the law of primogeniture and traced his descent by a most carefully-kept genealogical system to almost incredible antiquity. These nobles had courts containing heralds, astronomers, jesters, minstrels, priests, and indeed nearly all the retinue of a feudal barony. Athletics, dancing, and music, the last quite highly developed, were the common pastimes. Navigation was a science. Tahitian voyagers sailed thousands of miles to Hawaii and New Zealand, without compass; indeed the Maoris of New Zealand are now generally believed

to be a race resultant from the conquest of an aboriginal savage race by Society Island war chiefs who colonized and carried their customs and religion. War was both pastime and vocation, for quarrels between clans were incessant, but was much in the nature of duels or tournament. Cause was declared and the victor withdrew after honor was satisfied. Conquered territory was never held. On the whole the people were social, gay, and pleasure-loving to a degree which has given them a rather bad reputation with conventional moralists. Of Aryan ancestry, practically or wholly escaping Mongol or Negroid infusion by their exodus from the mainland in the remote past, they were and are still about what would be expected of a people much like Southern Europeans but who have been isolated for ages under all the passionate influences of the tropics.



A TAHITIAN ATHLETE.

THE NATIVES HAVE INHERITED SPLENDID PHYSICAL DEVELOPMENT FROM THEIR WARLIKE AND ATHLETIC ANCESTORS. THE MEN ARE OFTEN OVER SIX FEET TALL AND WONDERFULLY MUSCULAR.



FISHING GIRLS AT TAHITI.

THE SEA ALWAYS PROVIDES FISH AND THE LAND FRUIT AND IT REQUIRES BUT LITTLE EXERTION TO GET ENOUGH TO EAT.



HOUSE BUILT BY EUROPEANS.

A RESIDENCE NEAR PAPEETE, THE ONLY TOWN IN TAHITI. THIS IS A THATCHED DWELLING, WITH A PORCH AND FAR BETTER FITTED FOR COMFORTABLE LIVING THAN THE NATIVE HOUSE.

To such a people, who welcomed the white man with every hospitality, his weapons, liquors and religion soon proved bewildering. By the time the missionaries arrived in 1797 they found English firearms aiding a single chief to subdue his neighbors with the new European idea of kingship. Throwing in their lot with him, as probably their strongest protector, they aided this ambition. Tahitian history during the first 30 years of European influence can perhaps be best epitomized by a comparison of the population of 150,000 which Cook found with the population of about 10,000 which survived. Step by step the resentful nobles were driven back, measles took a frightful toll, and in 1815 the chief who had been fortunate enough to command gunpowder established a dynasty which continued until the island was finally taken by the French after several decades of squabbling by various European interests.

During the heyday of the whaling industry Papeete was a popular rendezvous. Herman Melville's "Omoo" describes his adventures in Tahiti as an escaped mutineer from a whaleship that touched there, although it is far less creditable than his more famous "Typee" and "Moby Dick." As South Sea trade in copra, shell and pearls developed, the port began to assume importance as its principal center. The Marquesas, the Paumotu or Law Archipelago, the Gambiers, the Austral group, Manahiki, Easter Island, and other less known palm-clad and surf-beaten islands came to support a fleet of picturesque schooners of the "Currency Lass" type. Stevenson loved so well to describe. Papeete beach, where the sorry adventurers of "The Ebb Tide" pooled their misfortunes and Captain John Davis performed for his breakfast on just such a vessel as may be seen there in numbers today, is elo-



A NATIVE HOUSE ON THE BEACH.

THERE IS ALMOST A CONTINUOUS SETTLEMENT ALONG THE BEACH FRONT AROUND THE ENTIRE ISLAND, THE HOUSES BEING ERECTED IN GROVES OF COCOANUTS, BREADFRUIT, MANGOES, ORANGES, BANYANS, AND BAMBOO.

quent of pearls and divers, blackbirding and piracy, typhoons, wrecks, and all the adventures of beach and lagoon that make up South Sea history.

Yet so charming a scene hardly befits such themes. Rainbow colored fish play through the coral along the very seawall at your feet, the placid green lagoon meets a skyline of palms on either hand, and seaward, beyond a tiny palm-covered islet where a queen once had her fortress, the surf rolls creaming on the barrier reef from the blue tropical ocean, rippling in the soft fresh Trades. Behind the town, itself hidden in verdure, green slopes rise quickly to splintered volcanic peaks nearly 8,000 feet high, carved by precipitous valleys with countless flashing waterfalls. Melville wrote that the ineffable repose and beauty of the Tahitian landscape was such that every object struck him like something seen in a dream and he could scarcely believe

such scenes had real existence. "Often," said Bougainville, "I thought I was walking in the Garden of Eden."

Papeete is the only town, but the fertile level shores of the island are so thickly populated as to form almost a continuous village along the road that skirts the beach for its circumference, of nearly 100 miles. Yet there is practically no open land except in the uninhabited mountains. Houses and villages are beneath endless groves of cocoanuts, breadfruit, mangoes, oranges, banyans and bamboo, with occasional ornamental exotics from other tropical lands. Alligator pears, native "chestnuts," mummy-apples and bananas, are in almost every dooryard. Except for two small sugar plantations, a few half-hearted cotton patches, and small clearings for taro, yams and other vegetables, there is no farming as we know it. Copra and vanilla are the island crops.



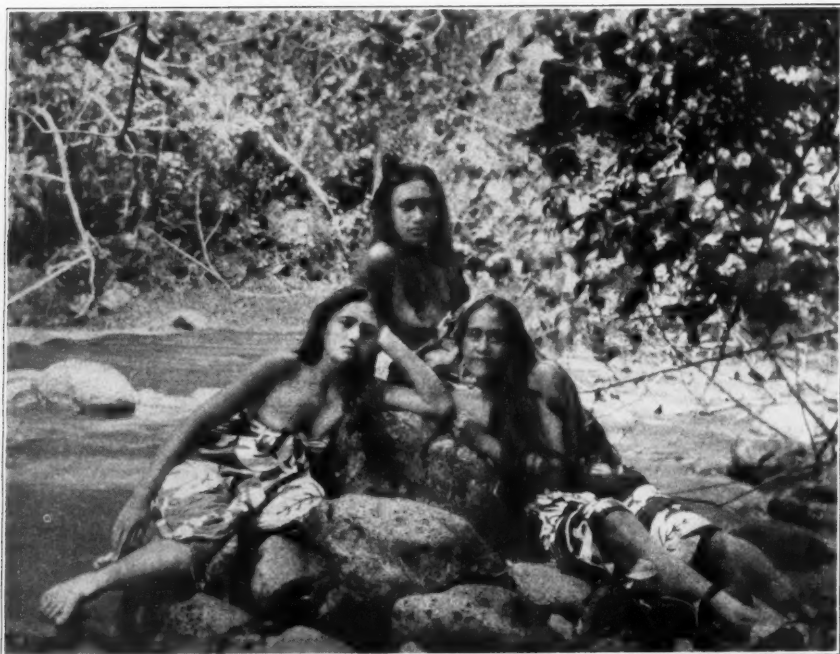
ONE OF THE RARE OPENINGS IN THE FOREST.

GREEN SLOPES RISE QUICKLY BEHIND THE TOWN OF PAPEETE TO SPLINTERED VOLCANIC PEAKS NEARLY EIGHT THOUSAND FEET HIGH, CARVED BY PRECIPITOUS VALLEYS WITH COUNTLESS FLASHING WATER FALLS.

Copra, which is dried cocoanut meat from which an oil is expressed that has countless uses for soaps, cosmetics and food-products, is the chief South Sea commodity. Hundreds of islands have practically no other trade. Indeed the cocoanut has no rival among trees for all round usefulness. Its fruit supplies food, drink and money. It feeds pigs and chickens with no labor beyond splitting the fallen nuts. Its leaves

furnish building material and sleeping mats; the nut husks are excellent fuel. Dominating the landscape by its individuality and grace, it appeals to the forester as the king of trees.

Vanilla, of which Tahiti furnishes perhaps a third of the world's supply, is also largely grown in the forest, the vines climbing rooted and growing poles in partial shade. The hermaphrodite flowers are "married" by deft native



BATHING IN THE VILLAGE STREAM.

THE MEN, WOMEN AND CHILDREN IN TAHITI ARE THE MOST ADEPT SWIMMERS IN THE WORLD. THEY LEARN TO SWIM AS CHILDREN AND SPEND MUCH OF THEIR TIME BATHING AND FISHING.

girls and the bean-like pods cured by hand by a delicate process requiring several months.

Diving for pearls and mother of pearl shell is not carried on at Tahiti but on neighboring atolls for which it is the outfitting and trade center and the diving season is one of great interest and excitement.

On the whole, however, industry has small part in the daily life of the inhabitants. Very little work suffices to procure all that is essential where nature supplies food and shelter. The writer once asked a native to bring him some fish. "Why don't you catch your own fish?" was the response. "That isn't the question; I'll give you a dollar for a good string of fish," was parried. The answer to this was unanswerable and final: "I don't need any dollar." Such is island philosophy. The sea will always provide fish, the land all other actual requisites, and since this will be

as true in the future as today, why trouble to lay up for one's children? Even tobacco and coffee are home-grown, so only imported luxuries require effort to obtain. Most of the real work of the island, such as curing vanilla, is done by Chinese who value money for its own sake. They bake the bread, run the restaurants, and own most of the small stores.

Nevertheless the natives are splendid people physically, no doubt an inheritance from their warlike and athletic past. The men are often well over six feet and tremendously muscular. The women are erect, graceful, beautifully formed, and often very handsome. Their brown eyes are unusually fine; their black hair long and waving. Polynesian races differ slightly in color, that of pure Tahitians varying also with caste and exposure, but the commonest type is an olive-gold not darker in shade than the skins of Chinese and



A TAHITIAN CANOE.

THE CANOES HAVE GRACEFUL LINES AND THOSE BUILT FOR RACING ARE INCREDIBLY FAST. THEY ALSO HAVE SAILING CANOES WHICH CARRY AN IMMENSE SPREAD OF CANVAS, AND ARE TRIMMED BY THE GYMNASTICS OF THE CREW WHO BALANCE THEMSELVES ON LATERAL SPARS EXTENDING FROM THE SIDES.

Japanese but warmer and less yellowish. Their features are pleasing and contain nothing Negroid or Mongolian.

The typical native dress is the pareu, a bright-colored patterned cotton cloth much like the Burmese sarong, twisted by the men around the waist and by the women around the breast. The latter, however, rarely wear it away from home, except when bathing or fishing, without a loose overdress. The men also are more and more coming to regard the pareu as informal, comfortable for home and work wear, but to be replaced by coat and pants on dress occasions. These customs vary much with the distance from town. Flowers constitute the chief adornment, worn in wreaths and singly over the ear. Carriers come in from the mountain valleys with loads of plantain, naked except for a loin cloth but with garlands of ferns and flowers.

The chief Tahitian characteristics are social. Feasting, dancing and singing are always in progress, usually on a wholesale scale. The entire village participates on the slightest excuse. Anything that can be done alone is unpopular. Even in fishing, the single venturer is regarded as a pot-hunter and no sportsman, the gentlemanly way being to set a net in the lagoon and invite the neighborhood to a drive affording much noise and frolic, or to organize a deep sea expedition for albacore. In several stays on the island the writer was never allowed to fish with hook and line from a single canoe because, while all right for a commoner who needs fish, it is not the thing for "quality" to do. The visitor is struck with the invariable good nature of the people. They rarely quarrel, drunk or sober. Violence is practically unknown. Murders are so infrequent as to be little

more than traditional and even fighting is extremely rare.

Like all Polynesians, they are wonderful swimmers, and probably excel all others as canoemen. Whereas in Hawaii the canoes seen today are purely utilitarian, the Tahitian retains his navigating ancestors' love for naval architecture. Racing canoes carrying twenty paddlers or more are built with great ceremony and beating of drums and carefully kept from the weather in houses constructed by the district. These canoes have beautiful lines and are incredibly fast. So are also the sailing canoes, which carry tremendous canvas and are trimmed by the gymnastics of the crew who balance themselves on lateral spars extending from the sides. They also have outriggers, but in racing these are not allowed to bury themselves and so impede progress.

In several visits, with intervals of years between, the writer has observed some change in dress and customs due to the inroads of "civilization." Return after one four years absence to find a moving picture show near one of the

ancient chiefteries was a disillusionment. But it will be long yet before modernity makes any conspicuous alteration in the palm-fringed skylines and surf-bound lagoons of Tahiti, or more than veneers the careless kindly nature of its people. To the traveler who wishes to see the tropics at their loveliest, to swim and fish and idle where no newspapers and telegrams remind him of his troubles, it will offer no disappointment unless he expects to survey the primitive with all the civilized luxuries of Palm Beach also at hand. To make the most of it he must leave the port and live a simple life with many petty annoyances. If he is willing to do this, without insisting upon his own ways or patronizing a people who are as sensitive as they are kindly, he will be excellently treated.

No attempt has been given in this article to discuss commerce, government, business opportunities, or other like phases which might be important from certain standpoints. The bombardment of September 22 is too recent and significant.

BUYING HANDLES BY WEIGHT

THROUGH new specifications for ax, sledge, adz, pick and other hickory handles, the Panama Canal authorities have recently purchased large quantities of this class of material for one-fourth less than formerly paid, and at the same time are getting just as serviceable stock.

The war department and the navy department, as well as the Panama Canal commission, have adopted these specifications, which were prepared by the forest service primarily for the use of the various branches of the federal government. Subsequently, however, they have been approved by the trade, both manufacturers and dealers, and adopted by several of the leading railroads.

The new rules are the result of a long study of the subject, covering exhaustive strength tests, investigations of the growth of hickory in the woods, processes of manufacture, and market conditions. Under the new specifications handles are selected according to weight, as influenced by the density of the wood, and they now include material which may be either partly or wholly of heartwood, known generally as red hickory. Red hickory was formerly discriminated against in commercial grading, but it is now accepted, since it has been found that weight for weight, it is just as serviceable as the white hickory. Handles which contain small sound knots or bird pecks, so located as not to affect the strength, are also accepted.

THE EUROPEAN WAR AND THE LUMBER TRADE

By R. C. BRYANT

Professor of Lumbering, Yale University

DURING the early days of the European war, many expressed the conviction that all forms of business in the United States would profit to some extent because of the disturbance of the commerce of the belligerent nations. The war has now progressed far enough to show that, with the exception of a few industries, this benefit will be deferred for some time at least and that the losses sustained in the meantime through the disturbance of our own business conditions may prove greater than any future gains.

The lumber industry, the third among our great industries in point of money invested, is undergoing a period of depression such as it has not experienced for some years, due, in large measure, to the marked depression of our domestic trade caused both directly and indirectly by the present war, although the actual loss of our export lumber trade has been a secondary factor as compared to the reduction of the home demand.

Lumber is a commodity which is a necessity to civilized man, but unlike foodstuffs and articles of clothing its purchase can be delayed temporarily without serious consequences. During periods of financial depression from any cause whatever, we find that the purchase of lumber in large quantities is early discontinued and is resumed only after conditions have again begun to assume a normal state.

More than ninety per cent of our total lumber production is consumed by the domestic market and in order that the lumber trade may be brisk it is essential that our banking resources shall be abundant, since this means minimum interest rates and ready loans, both of which foster railroad development and building construction, two

factors of great importance in the lumber market.

Previous to 1906 the lumbermen enjoyed prosperity, due to the rapid development of domestic trade in general. The demand for lumber was great and the f. o. b. mill price of all construction woods rapidly increased, culminating in 1907 in prices for yellow pine, for instance, which were in excess of those received at any period either before or since.

Stumpage also increased in value at a very rapid rate, and lumbermen were encouraged not only to make heavy investments in raw material before the price became too high but also to add greatly to the mill capacity of the country. Many new mills were constructed and existing plants were also enlarged to meet the insistent demands for construction lumber and railroad material. The panic of 1907 had a demoralizing effect on building construction and also curtailed the extension of the railroad mileage of the country. Lumbermen found themselves with a heavy investment and a mill capacity greatly in excess of the normal demands, and the price of lumber dropped from \$5 to \$7 per thousand feet at the mill, reaching such a low level that many found it difficult to prevent their business from going into bankruptcy.

Since that time there have been periods when lumber market conditions have shown a change for the better, but as a whole the level of prices has not been high enough to enable the average operator to earn a legitimate profit on his investment.

The railroads which in normal times are very large consumers of lumber, using several billion feet annually, have purchased only sufficient material to keep their plants in operation and, for

some time previous to the war, had failed to buy even enough lumber to keep their rolling stock in repair, accumulating "bad order" cars by the tens of thousands on sidings, awaiting an improvement in financial conditions in general and also the clearing up of investigations being made by the Government. Just previous to the outbreak of the war, however, there were signs of renewed activity on the part of the purchasing department of railroads, and lumbermen began to feel optimistic in regard to an increased trade with them. The liquidation of very large amounts of railroad securities held by European investors immediately checked buying on the part of the railroads, and the loss of this trade has been one of the depressing features in the lumber business.

Another factor which has a marked bearing on the present unsatisfactory state of the industry, especially in the South, is the inability of producers to market certain staple articles, such as cotton and naval stores, valued at hundreds of millions of dollars. The cotton crop of the present season, one of the largest grown for several years, comprises the chief money crop of the farmer. European countries, mainly the belligerent nations, normally take more than one-half of the crop, but the indications now are that they will purchase only a small percent of the usual quantity. Not only is it impossible to successfully market this crop in other countries, due to their lack of plants suitable for working up the product, but also it has not been possible to increase the consumption in this country. In fact, the demand in the United States for cotton goods has decreased since the outbreak of the war; hence, the purchases of the raw supply are visibly affected.

A satisfactory method of financing the crop has not yet been reached, and until this is done the purchasing power of the lumber consumer of the South will be extremely limited. The pool of banking interests which proposes to raise and administer a fund of 135 million dollars for loan on the security of cotton may be a partial solution of the

problem, yet this will scarcely counterbalance the shrinkage of income of cotton farmers, due to low prices, (6.3 cents per pound on November 1st, as compared to 13 cents on the same date last year), a shrinkage which the Bureau of Crop Estimates of the United States Department of Agriculture places at 435 million dollars. The effect is far reaching since the farmer receives credit from the country merchant for supplies and sometimes cash advances; the country merchant, in turn, receives credit from the jobber, and the jobber from the manufacturer. The entire credit system is thus crippled. The "buy-a-bale" movement which has been advocated by some as a solution of the disposal of the cotton crop is totally inadequate to meet the present stringency, since at best it would probably take care of only a small per cent of the surplus, and, furthermore, the holding of this cotton in warehouses for an indefinite period awaiting a satisfactory price merely jeopardizes the next year's crop. What is needed is a market for the product which will convert it from a raw into a manufactured state.

Cotton is the staple crop of a large part of the southern rural population, many of whom have always operated on the "one-crop" plan and are incapable of substituting other products for cotton because they do not know how to grow them. One feature which may have a marked bearing on the extent of the acreage planted next season is the inability of the planter to secure the usual amount of fertilizer required for his field. In the past, phosphate, an important element in the commercial fertilizers, has been secured chiefly from Germany, and the elimination of that source of supply will undoubtedly embarrass the fertilizer manufacturers in this country. With a low price for their cotton this year and a probable decreased acreage next year, the southern farmer will not be inclined to purchase commodities not absolutely essential to his existence, and he certainly will not buy lumber with which to make improvements.

The lumbermen of the South depend on marketing a large percent of their

low grade product either in the state in which it is produced or in neighboring states on a low freight rate, hence the elimination of the farmer as a consumer is of vital consequence.

Another strong element mitigating against the Southern lumbermen is the fact that the naval stores crop, valued at nearly thirty million dollars, has not been successfully marketed. The bulk of the naval stores products are sold in Europe, and the elimination of the greater part of the demand from this region has caused financial loss not only to operators but to thousands of employees who were discharged at an earlier date than has been the custom.

Competition from sawmills in British Columbia, and over-production in local mills, with the resulting unloading on the market of large quantities of lumber are among the chief factors which have wrought havoc with the lumber industry in the Northwest.

The removal of the tariff on forest products has been a severe blow to lumbermen on the Coast, since it has opened our western markets to Canada—an especially unfortunate circumstance at this particular time. The industrial depression prevailing for the past year in Canada has greatly reduced the local demand for lumber and shingles, and, in order to keep their mills running, Canadian lumbermen have made a strong effort to dispose of their products in the United States.

Some idea of the extent of our trade in Canadian lumber may be gained by an examination of our imports previous to and following the removal of the tariff. Canada, chiefly British Columbia, sold in this country, during the first six months of the present year, nearly 170 million shingles more than she sold to us during the entire year of 1913. This was an increase of 217 per cent. The lumber imports from western Canada are still more striking, those for the first six months of 1914 exceeding the total for the entire year of 1913 by 246 per cent.

The western lumber manufacturers, as a whole, are facing serious financial difficulties due to their heavy investments in stumpage and the rapidly

increasing carrying charges. Taxes and the cost of fire protection have increased yearly, and in order to prevent these charges and also interest on the investments from compounding and automatically doubling the cost of the raw product every nine or ten years, stumpage owners have increased their mill capacity to a point which now exceeds the present market requirements. The over supply of lumber has led to such keen competition, during the present business depression, that lumber prices f.o.b. mill are now so low that the best grades are selling for about \$22 per thousand board feet; an excellent quality of building lumber for about \$8 per thousand feet; and low grade lumber for \$3.50 per thousand feet. The average price per thousand feet, f.o.b. mill for all grades marketed has not averaged, during the present year, more than \$11, a drop of several dollars over the average mill value of two or three years ago.

The lumber-consuming population within a given radius of the western manufacturing centers is much less than for an equal radius in the other lumber-producing centers of the United States. The high freight rate into the most desirable consuming centers, namely, the great prairie region of the Middle West, combined with the very low price at which lumber is now sold, due to unrestrained competition, has practically made it impossible to conduct the business so as to yield even a small profit. It will take more than a revival of good business conditions to patch up the badly demoralized industry in this section, and some means must be found to increase the efficiency of the marketing methods and curb the ruinous competition which now threatens to sap the life of the industry.

The money stringency which has prevailed in this country during the last three months has been reflected most markedly in the amount of building which has been done, reports for the month of September showing a decrease of from 25 to 32 per cent over the previous month. This is due to the decreased banking resources of the

country and to the resulting increased interest rate.

The rural sections of the farming regions of the Middle West have not felt the money stringency to as great a degree as many other sections since their farm products are in great demand and prices for farm products are high. The trade, therefore, in that section does not show the fluctuation that is evident in large centers, especially in the East.

The loss of foreign trade in lumber has not been so vital to the lumber industry, except in an indirect way, since recent estimates show that only approximately eight per cent of the lumber cut of 1913 was marketed abroad. European trade in lumber almost ceased during the early period of the war, due both to the cessation of purchases abroad and also to the withdrawal of vast numbers of vessels from the cargo carrying trade through fear of capture by the navies of hostile nations. This trade has been resumed only to a limited extent, and it is doubtful if the amount forwarded to the European markets for some time to come will be of sufficient importance to have any appreciable effect on the industry in this country.

Lumber trade with South America was reported unsatisfactory for a year previous to the war, due to unfavorable crop conditions especially in Argentina, the largest South American consumer of our lumber, but gave promise of marked improvement about the time that the war broke out, when it again became depressed due to the disorganization of the credit systems of the South American countries.

We always have supplied a large part of the lumber imported by South American countries and will still continue to do so, but at the present time their buying power has been greatly curtailed by their inability to make settlement for goods purchased. Our imports of all commodities from South America during the fiscal year 1913-14 were valued at approximately 223 million dollars, while our exports of all kinds to that continent during the same period were approximately 125

million dollars. The balance of the imports of South America amounting to nearly 900 millions came largely from Europe. We have had no direct banking facilities with our sister republics and because they owe heavily in London the trade accounts between the two American continents have been normally adjusted at that place. Under existing conditions this is impracticable. We are ready and willing to purchase and pay for South American products, but lumbermen, along with other merchants, are reluctant to sell their commodities in countries which have declared moratoria, as have several of those in South America.

The future holds promise for better things since American banking firms are now permitted to establish branches in foreign countries and steps have already been taken by at least one banking firm to do this. However, it will be some time before the situation will be relieved to the extent that the trade in lumber and other commodities will again resume its normal course.

Indirectly the loss of foreign trade has been a hard blow to the lumber industry. There are many sawmills along the South Atlantic, the Gulf Coast and the Pacific Coast, which have been engaged to a large extent in supplying lumber to foreign countries, and with this field cut off they have naturally turned to our domestic markets and have invaded the field previously occupied almost exclusively by interior mills.

The interior market, already in an unsatisfactory condition, has been unable to assimilate this increased output at a price which would yield a reasonable profit to the producer, and, as a consequence, many have been liquidating and still continue to liquidate on their investment in stumpage at a loss.

It may be asked why production does not follow the law of demand and adjust itself to market conditions. There are many reasons why the industry responds rather sluggishly to the general trade barometer. The lumber manufacturer has a large investment in plant and often in raw material, on which he must pay interest or else

turn over his property to his creditors. He, therefore, attempts to secure ready money to continue his business by marketing his product at a price below its actual worth. He can rarely secure loans from banks when markets are depressed, because banks then refuse to loan in sufficient amounts on satisfactory terms. Overhead charges are an important item in the cost of placing lumber on the market, and a curtailment of cut or a total cessation of operations seldom reduces this to a marked degree, hence a large deficit rapidly accumulates and may ultimately mean bankruptcy.

The manufacturer in some sections of the country, such as the Northeast and the Lake States, often transports his logs to the mill by water, cutting the timber during the fall and winter previous to the sawing season—the warmer months of the year. He must, therefore, anticipate market conditions months in advance, and having invested his money in logging and in placing the timber in the stream he feels forced to manufacture the logs into lumber, both to save them from deterioration and to get them into marketable form.

Even with railroad operations it is costly to close down since a large amount of valuable equipment becomes idle and must be cared for at considerable expense, even though it is not earning anything for the owner.

A large labor organization is essential for the operation of a big lumber plant, and an efficient force may be the result of several years' effort on the part of the operator. A cessation of operations means the dissipation of the crew, who are either forced to remain idle or else seek employment elsewhere. It is usually the case that a total or partial cessation of operations is general throughout a section and all industries are more or less affected, hence the labor supply exceeds the demand and there is but little opportunity for even a good workman to earn a living. Many lumber manufacturing plants are located more or less remote from the large centers of population, and frequently the lumber manufacturing plant is the only industry of the community

and the sole means of earning a livelihood for the citizens. Under these conditions an added hardship is laid upon the woods or mill worker who finds himself without employment. It is greatly to the credit of many lumbermen that today they are operating their plants at least on partial time, chiefly to provide employment for their workmen who have been faithful to them, although it means a financial loss to do so.

Another reason why the large lumber manufacturer who caters especially to the domestic trade cannot cease to produce lumber is that he has built up his trade and customers demand some lumber even during periods of financial depression. If the manufacturer ceases to produce lumber, buyers seek out other sources to supply their needs and the seller may lose in a short time many desirable customers. A resumption of business on the part of the producers means the development anew of trade connections, since old customers who have been lost seldom return in normal times.

Extremely low mill prices, such as prevail today, mean greater waste both in the forest and in the mill, since the poorer grade of lumber cannot be sold at a price that will even approximate the cost of manufacturing and selling it. It is of direct interest, therefore, to each and every citizen of the United States that some steps should be taken which will make it possible to market, without loss, the poorer grades. Poor grades can be marketed only when the supply of all grades is not in excess of the demands of the country. In times of business depression this means a curtailment of cut on the part of the larger operators, as well as scientific marketing of the product, both of which are largely dependent on close cooperation among manufacturers. This does not exist today because the members of the lumber industry and lumber trade associations of the country have been harassed during recent years both by courts and by the Federal Government, with the result that such cooperation as formerly existed has largely been destroyed and both the industry and the public have

suffered by the demoralization which is now present in the lumber business, caused first by investigations and later aggravated by the business depression caused by the war.

The "bogey," in the shape of an alleged lumber trust which has been flashed before us constantly in the newspapers during the last few years, is a figment of the sensationalist, since there has never been an organization of lumbermen in the United States that has ever dominated the entire lumber trade and controlled output and prices. From the standpoint of the economical use of our forest resources, it has been

our misfortune that a "governor" of some character has not been in power.

The lumber industry in its present trouble deserves the good will and co-operation of both governmental and private agencies, and it is to be hoped that this will be granted it in fuller measure than has been meted out to it in the past. The lumber industry is essential to our well being and prosperity, and every encouragement should be given for its development on a basis which will give assurance of the fullest and most economical utilization of the forest resources.

PENNSYLVANIA FORESTRY PROGRESS

A letter from Robert S. Conklin, Commissioner of Forestry of Pennsylvania, says:

"I call your attention to the activities of the Pocono Forest Fire Protective Association in the north eastern part of Pennsylvania. They have increased in membership almost two hundred per cent. in the last year and instead of operating simply in a few townships on the Pocono mountains, are now exerting their influence over the entire county of Monroe and may possibly extend into Pike and Wayne counties. They were very active in helping pass some improvements to the forest fire laws in the last Legislature, and expect to be of considerable service in the coming session of the general Assembly. At their request a District Forester was appointed for Monroe county and through his activities the fire wardens have been thoroughly organized and a patrol system has been worked out. As soon as the association gets a little better financial support, through cooper-

ation with the Department of Forestry, the district forester will institute a complete system of patrols for the entire county. In October practically all the papers of the county issued a conservation number. The matter of forest protection is becoming a real live subject in the neighborhood, and in October Dr. J. T. Rothrock delivered a lecture in Stroudsburg on the subject "Forests in the Life of the Nation."

A year ago the Pennsylvania Forestry Department published some large fire posters and some small forest fire stickers. Both of these features have met with such great success throughout the State that the department has had to have the third printing of fire posters and is now awaiting the second order of fire stickers. This fall the merchants throughout the forest regions of the State placed the fire sticker upon each box of cartridges which goes out from the stores. In this way it is certainly possible to reach a great number of hunters.

Speed in Fire Fighting

What is supposed to be record speed in getting men to a forest fire is reported from Oregon, where on one of the National Forests, a ranger went to town, hired ten men, and got this force to the fire twelve miles away within 48 minutes after he was notified by telephone.



A SUNDAY CROWD ON TAMALPAIS.

ON SUNDAYS AND HOLIDAYS THOUSANDS OF PEOPLE INVADe THE TAMALPAIS REGION, SPENDING THE DAY ON THE DELIGHTFUL MOUNTAIN SIDE.

TACKLING TAMALPAIS

By FREDERICK E. OLMSTED

Forester for the Tamalpais Fire Association

FROM the earliest days fires have always raged on Mt. Tamalpais, California, during the dry seasons. Every summer has brought numerous burns, some large, some small; and once every dozen years or so great conflagrations have swept the hills, licking the cover clean and causing more or less consternation in the region 'round about.

The fire of 1913 was probably no worse than some of the periodical con-

flagrations of the past. It was taken more seriously, however, because more lives were threatened than ever before, because the property narrowly escaping destruction totaled several millions of dollars, and because public interest in the Tamalpais region as a vast mountain park has recently become intense. The fire of last year burned for five days, covered 2,000 acres, nearly wiped out the towns of Mill Valley, Corte Madera and Larkspur and was fought by some



A FIRE TRAIL.

THESE TRAILS, CLEARED THROUGH THE HEAVY BRUSH COVER OF THE RIDGES ON MT. TAMALPAIS, PERMIT QUICK ACCESS TO ANY FIRES.

4,000 men at an expense to the community, state and nation of more than \$30,000. Not to be overlooked, moreover, were the indirect losses in property values which followed as a result of the scare. The fire was finally checked with the assistance of troopers from the United States Army acting under advice from officers of the Federal Forest Service and old-time fire fighters of the locality.

To avoid a repetition of such a calamity the Tamalpais Fire Association is carrying out a scheme of systematic fire prevention which bids fair to become permanently established.

The jumbled hills of Marin County end abruptly at the Golden Gate on the

south, are pounded by the Pacific on the west, slope gradually to San Pablo Bay on the east and stretch northwards to join the great redwood covered mountains of the Coast Range in Mendocino and Humboldt. Mt. Tamalpais is a sort of jumping-off place at the extreme southern end of the hills and rises sharply from San Francisco Bay to an elevation of 2,600 feet. A large part of the land is covered with a dense and difficult growth of high and low chaparral—all the many species common to the Coast Range. There are scattering patches of timber in the canyons, largely redwood and douglas fir, while on the slopes of Lagunitas Canyon and in Muir Woods National Monument are ex-



MT. TAMALPAIS.

THE TOWNS SEEN IN THE DISTANCE AT THE FOOT OF THE HILLS ARE IN REAL DANGER OF DESTRUCTION FROM THE BRUSH FIRES. NOTE THE SMOKE OF A FIRE ON THE LEFT.

tensive and heavy stands of these trees. Hardwood forests of oak, laurel and madrone have smothered out the brush cover here and there. The whole effect is one of exquisite softness; combined with delightful views of ocean, bay and distant hills the restful impression conveyed by this unique and remarkably

beautiful little region is beyond description.

All of which goes to say that the top of Marin County is a most wonderful natural park, a great recreation ground, and should be treated as such. It is now used as a play-ground by thousand of people from San Francisco and the



BRUSH BURNING ON TAMALPAIS.

THIS BRUSH IS CUT OFF LEVEL WITH THE GROUND, PILED AND CAREFULLY BURNED. IT IS SOAKED WITH KEROSENE ON WET DAYS.

near-by towns and in years to come sit use for this purpose will be largely increased. It follows, as a matter of course, that the highly inflammable growth must be protected against fire and that this protection must be extremely thorough. Fire must be prevented from starting, rather than fought after it has spread.

All the land is in private ownership. This public park (which it is, in effect) is privately owned and is enjoyed by the people through the generosity of the owners. Thus, in many ways, the situation is complicated.

The plan calls for a construction period of three years, during which time

forty miles of fire trails, numerous foot trails, a telephone system and several lookout stations are to be constructed. Within this period, also, the district to be protected must be thoroughly supplied with fire fighting tools and other necessary equipment. Last winter some thirteen miles of fire trails were completed. These run, for the most part, either along the tops of the ridges or about a hundred feet below the crests on the leeward sides. In the latter cases the trails are "one way" fire trails, designed for the protection of towns or property threatened chiefly by fires which are almost certain to come from one direction only. As these

trails are slightly below the tops of the ridges they are out of the prevailing winds, thus affording safe opportunity for backfiring and, in many instances, stopping the slow down-crawling fire without the assistance of back-fires. The trails vary in width from eight to thirty feet, depending upon the nature of the locality, the height of the brush, and the fire hazard. The brush is cut off level with the ground, piled and burned. For the present, at least, grubbing out the roots is too expensive and the new growth will have to be cut back every two years. The average cost has been \$114 a mile.

Fire fighting tools, brush hooks, shovels and axes, for a total of 600 men, are distributed in boxes located at convenient points along the trails and roads. Each box, also, contains lanterns and five gallon water bags.

Mounted patrolmen are employed during the dry season, from the middle of May to the first of November. These patrolmen are supported by numerous volunteer fire fighting forces with headquarters at the little towns around the mountains. Each of these forces is thoroughly organized under definite and well understood leadership. There is in each instance a captain of fire fighters with a couple of assistants and squad leaders, and the commissary and other routine business of the organization is tended to by an agent who, in case of fire, sticks to his post in town and carries out instructions from the field. The leaders and agents, as well as the patrolmen, are deputy state fire wardens with power of arrest and authority to compel men to fight fire.

As before mentioned, the *prevention* of fire is the most important and by far the most difficult job to be tackled by the association. Although the causes of fire are similar to those on the National Forests—matches, tobacco and camp fires—it should be remembered that there are a hundred people roaming about the Tamalpais country for every one on the National Forests. On Sundays and holidays it is not at all uncommon for 5,000 people to tramp over and camp upon a district not exceeding 10,000 acres, and as a part of

this throng is made up of the careless and irresponsible element from the city the fire risk on such days is extremely high. To fight this condition a great deal of publicity has been given to the work, stress being laid upon how easy it is to prevent fires from starting and how difficult and costly to stop them after they have spread beyond the control of a few men. Thousands of fire warnings have been posted along the trails and at camp sites and these seem to have served a useful purpose. Here is one sample:

*Was your match COLD when you
threw it away?
LOOK BACK!*

Here is another warning which proved effective.

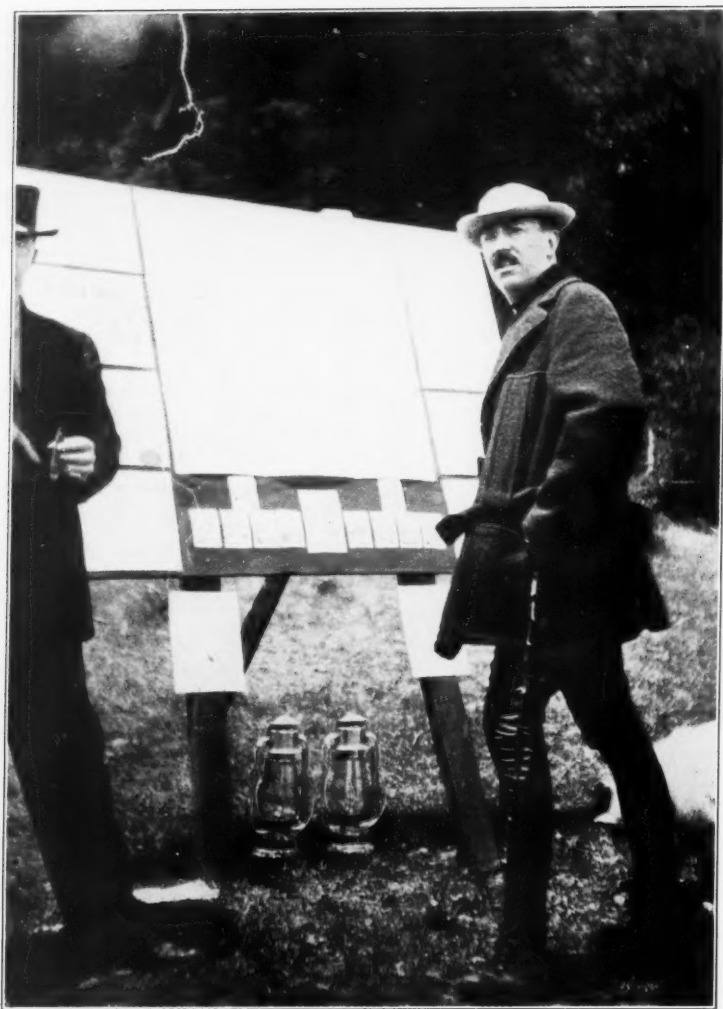
DANGER!

PREVENT FIRES

1. *Break your match in two before you throw it away.*
2. *Stamp out lighted tobacco before you leave it.*

The camp fire nuisance has been well controlled through a system of permits. Fires are allowed at certain designated places only where the ground has been made as nearly fool-proof as possible, and even at these places camp fire permits are required. The public has not shown the slightest objection to such regulations. It is considered better policy to control the building of camp fires than to endeavor to prohibit them. General prohibition is both easily proclaimed and quite impossible to enforce. Regulation is thoroughly effective. Moreover, there is no good reason why camp fires should not be permitted at certain locations and under suitable restrictions. Such a privilege adds greatly to the enjoyment of the park lands.

The most interesting part of the associations' work is the financial or-



ADVERTISING FIRE PROTECTION WORK.

A LARGE BULLETIN BOARD IS USED. ON THIS ARE TACKED MAPS OF THE TAMALPAIS REGION, PHOTOGRAPHS OF IT AND A VARIETY OF SAMPLE FIRE WARNINGS.

ganization. The tracts of land in private ownership vary in size from a few acres to large estates of 12,000 acres and more. For the three year construction period all the landowners are contributing on the basis of 10c per acre per year. The towns, which are vitally concerned from the standpoint of self-preservation, are subscribing largely

according to their assessed valuations and the danger to which they are exposed. Lastly the public, enjoying the use of private lands as a public park, shares in the expense of protection through membership dues in the association. Eventually, if the organization is to be a permanent one, Marin County must cooperate financially by means of

a general tax levy, and in case the county does share the expense it is not at all unlikely that the State of California will become a partner in the work. A precedent for state cooperation has already been established in the admirable fire prevention organization of Los Angeles County. Moreover, the systematic protection of Tamalpais is much more than a local matter; it concerns both the state and the nation.

The methods of fire prevention were

entirely successful during the dry season of 1914. Only eight fires occurred, and these were all in the grass country of the foot-hills, burning over but a few acres in each case. They were promptly tackled by the organized fire fighting forces and extinguished with practically no losses. Of course some fires must be expected in the future; but they should be limited to comparatively small areas and should be squelched without a rumpus.

FIRE CONDITIONS IN CALIFORNIA

By ALEXANDER W. DODGE, Deputy State Forester

FIRE conditions in California during the past summer have not presented a problem as difficult as the one dealt with in 1913. The fire season of 1913 was exceptionally severe; a great many large fires occasioned an enormous loss, namely \$511,077.00, an amount far in excess of the financial loss sustained during 1914. The total money loss, due to forest fires in California in 1914 is \$179,025.75. Fires have been well reported on the National Forests and the United States Forest Service has devoted special attention to the prevention and suppression of forest fires this year. However, since a great many fires without the National Forests have occurred and have not been reported, owing to the inefficient system of voluntary fire-wardens, it is impossible to secure an accurate total. The figures of loss, then, during 1914, are necessarily incomplete for areas outside the National Forests.

During the year there have been comparatively few heavy winds, such as marked the summer months of 1913. Although the vegetation became dry, the atmosphere has been exceptionally cool and moist during the greater part of the summer. This, naturally, had its fortunate effect upon the number and seriousness of forest fires. The Federal Forest Service has given the fire situation added consideration by maintaining extra fire patrols and forest guards. The State Forester, so far as his limita-

tions would permit, has made every effort to reduce the fire damage by making forest fire prevention popular. There has been rigid prosecution of offenders against the State and Federal forest laws. Throughout the summer it has been proved that the damage actually done has been small in comparison to the damage averted. The Sisson fire was controlled at an expense to the Forest Service of about \$25,000.00. However, a great many thousand dollars worth of property would undoubtedly have been destroyed had the fire not been fought. Our inadequate state forest law handicaps the State Forester in handling just such fires.

There were 1,971 forest fires reported in 1913 within the State, while the incomplete report for 1914 shows 1,330. Forest fires, since January, 1913, have caused the loss of four human lives in California.

Forest fire conditions, outside the National Forests, are going to remain approximately the same, modified slightly each year by favorable or unfavorable weather conditions, until the State establishes and maintains an adequate protective policy. And this can be done only through proper legislation. The attempt to secure such legislation is constantly being made by promoters of an effective state forest law. In the past these efforts have been defeated by opposition based largely upon selfishness.



THE CANADIAN DEPARTMENT

By ELLWOOD WILSON

The Hon. O. T. Daniels, Attorney General of the Province of Nova Scotia, is investigating the practicability of reforestation by planting in his Province and also the methods of fire protection in use in various sections with a view to improving local conditions. Since the survey made of the Forest Resources of Nova Scotia by Dr. Fernow in 1911 there has been an awakening of public sentiment to the necessity of conservation. The Maritime Provinces have been a little behind the others in this work and Nova Scotia is to be congratulated on making a start.

Mr. G. C. Piché, Chief Forester of Quebec, with his Assistant, Mr. A. Bedard, have just issued as "Bulletin No. 2" a pamphlet entitled "Etude sur les Forêts de la Province de Quebec." This is largely a compilation from the records and shows: the forested areas of the Province, the forested areas of the whole of Canada, the value of forest products by kinds for Canada, the areas privately owned and under license in Quebec, Quebec's Forest Reserves, list of names of trees occurring in Quebec, in Latin, French and English, the total quantities of wood cut since 1871 and the revenue derived therefrom. There is also a table showing the number and species of all the trees on forty-five acres of land.

Mr. Alan Parlow, of the Canadian Society of Forest Engineers, has gone to England with the first Canadian Contingent.

Owing to the urgent need of pit props, telephone and telegraph poles in England, the Quebec Government has removed the restriction which forbids the export of unmanufactured wood, insofar as it applies to these articles.

The Quebec Government held a sale of timber lands to be operated under license on October 20th. 1,036 square miles were sold, mostly in small tracts, for an average price of \$238.00 per square mile.

The Forestry Department of the University of New Brunswick has opened the scholastic year under favorable auspices, with about thirty-two students. Under Professor R. B. Miller, this Department has done excellent work, the graduates showing up well. Three are District Foresters in British Columbia.

Professor W. N. Miller, formerly Inspector of Forest Reserves in the Dominion Forestry Service, has been appointed to succeed Mr. A. H. D. Ross as lecturer on Mensuration, Utilization and Protection.

Mr. J. E. Rothery, of the firm of Vitale & Rothery of New York, has just finished the field work of a survey and reconnaissance for the James McLaren Co. of Ottawa, covering about 2000 square miles.

The Forestry Work of the Canadian Pacific Railway, with Eastern Headquarters in Montreal, has been transferred from The Department of Natural Resources to that of Operating. This work is in charge of Mr. B. M. Winegar, who studied at the University of Michigan.

Owing to the war it is probable that the Forestry Congress which was to have been called by the Premier Sir Robert L. Borden, in Ottawa in January, 1915, will be postponed.

All the lumber Companies in Eastern Canada are curtailing their cut somewhat on account of the war.

In common with the Pacific Western States, British Columbia experienced a very dry and bad fire season, the worst in many years.

Figures so far available are as follows: Total area burned, over 300,000 acres; of this over 200,000 was old burn or slash. Nearly 50,000 acres was valuable second growth. Over 15,000 was merchantable timber. Over 60,000,000 F. B. M. merchantable timber was killed, of which over $\frac{1}{2}$ is salvageable. Nearly 400 miles of fire lines were built in fighting the different fires. The total number of fires was about 1500, of which over 400 cost money to extinguish. The total cost of fire fighting was approximately \$100,000.

In one big fire on the tributary of the Barriere River a whole train was chartered to carry fire fighters from Kamloops, the nearest town, to the scene of the fire.

The figures above show that the expense of fire fighting has been great and that a large area has been burned over. The amount of merchantable timber destroyed is, however, comparatively small, the chief damage being

young growth. A good deal of the area burned over was old logging slash and in many cases this is actually a benefit, since it removes a fire hazard and clears the ground for reproduction.

The Northern limit of white pine in Interior British Columbia is at the headwaters of Sand Creek, a tributary of the Fraser River, near Tete Jaune Cache. The head of Sand Creek is near Albreda Summit, in the pass through which the C. N. P. Railway goes on its way from the Fraser River to the North Thompson River.

A Forest Branch telephone, 65 miles in length, connecting a number of islands which are situated between Vancouver Island and the Mainland, has just been completed, and is working satisfactorily. It crosses three different channels (one of them being over 1000 feet in depth, and all of them with swift tide current) by submarine cable, totalling in length 16,000 feet. These islands are central, in the zone of greatest logging activity on the British Columbian Coast. Besides rendering valuable service in fire protection and forest administration, this line gives connection through a Dominion Government telegraph line with Vancouver, the financial and supply centre, to a large number of logging operators.

Another telephone line, 120 miles long, has just been completed up the Columbia River, from Revelstoke North to the Big Bend of the Columbia, near the mouth, of Canoe River, a tributary. This portion of the Columbia lies in the Interior Wet Belt, where the timber, Douglas fir, cedar, hemlock, white pine, spruce and balsam, is second only to the Coast timber in size, quality, growth and stand per acre. A large amount of this timber is held privately under lease or license, and the balance is still the property of the Crown. This Interior Wet Belt type of timber extends Northerly up the Canoe River. The Forest Branch has already built a trail in the upper portion of the Canoe Valley, and it is planned eventually to complete the trail down to the Columbia, and to extend the telephone line up the Canoe.

For quality, quantity and accessibility of pulp timber and for available water powers, British Columbia probably stands first in the world. All along the Coast are vast quantities of hemlock, spruce and balsam, easily transportable to the many fine water powers to be found near saltwater in the numerous inlets. In the Northern Interior, in the upper water-sheds of tributaries of the Northern part of the Fraser River, and the other Northern Rivers, are to be found vast areas of spruce and balsam forests, while the mountain rivers afford numerous good sites for water powers.

Each year the Forest Branch is making fuller use of the Dominion Government telegraph stations, wireless and otherwise, both for administrative and fire protection work. Through cooperation with the Dominion Meteorological Service at Victoria, telegraphic weather reports have been received each day during the fire season from various stations throughout the Province. These reports, especially those from the Northern stations, have assisted in the forecasting of weather and enabled the Forest Officers to be notified in advance of dangerous dry winds. The reports were also transmitted to the U. S. Meteorological Service at Portland, and were utilized by the Western Forestry and Conservation Association in a similar manner.

On the Yukon telegraph trail, away up North of Hazelton in the Groundhog country, the Forest Branch has seeded certain burned areas of Crown land to timothy and white clover, in order to furnish food for the horses of the Forest Guards.

Pulp sales have recently been advertised under the authority given by the

Forest Act offering somewhat over 200 million feet of pulp timber for sale at upset prices ranging from 10 cents to 25 cents per thousand feet Board Measure.

This timber is comprised mainly of Western Hemlock, Balsam Fir and Sitka Spruce with an admixture of Douglas Fir and Cedar. The time allowed for the removal of the timber is 30 years and for the first time in the history of Canada provision has been made for the readjustment of stumpage prices every five years for the last 20 years of the term. This readjustment is based on the recent Royalty Act, which provides for a percentage increase on the increased cost of manufacture of lumber over \$18.00, the proportion increasing 25% in 1920 to 40% in 1945.

A cargo of 160,000 creosoted Douglas Fir Railway Ties was shipped last week by the Dominion Creosoting Company of Vancouver to the Bengal and North Western Railway Company at Calcutta.

The Forest Branch was instrumental in obtaining this trial order for British Columbia and acted as inspectors for the Railway Company to see that their specifications were properly fulfilled. These specifications called for the best quality of Douglas Fir to be impregnated with 12 pounds of creosote per cubic foot.

The Forest Branch is now negotiating with importers in the United Kingdom with a view to supplying quantities of mine props, which before the outbreak of European hostilities were obtained from the Baltic. Great Britain is a tremendous user of pit props and these can be produced in almost unlimited quantities at a very low figure in British Columbia, and it has been shown repeatedly that Douglas Fir is one of the best pit prop woods.

Germans Protecting Trees

It is said that the German invaders of Belgium, whatever else they may have destroyed, have been careful not to injure park trees. The cavalymen, so a report goes, are forbidden to tie their horses to trees for fear that the animals will gnaw the bark. Germany was the first nation to apply forestry on a large scale, some of the crown forests having been under scientific management for over a hundred years.

ANNUAL CONSUMPTION OF WOOD

STATISTICS have been compiled by the Forest Service which show for the first time precisely how the lumber produced in the country is utilized. About 45 billion feet of lumber of all kinds is the annual production in the United States; of this nearly 25 billion feet, board measure, are further manufactured, the other portion remaining for rough construction lumber and for similar purposes. This is exclusive of material which reaches its final use in the form of fuel, railroad ties, posts, poles, pulpwood, cooperage, wood distillates, and the barks and extracts demanded by the tanning industry.

The work of collecting and compiling the figures extended over a considerable period and was carried out State by State; but as one full year was made the basis of statistics in each State, the total is a fair average of the use of lumber in further manufacture in the whole country. Between 50 and 60 per cent of the lumber produced is subject to further manufacture. In preparing the figures in this way, however, it should be remembered that considerable material reaches shops and factories in the form of logs, bolts, and billets without having passed through sawmills, and while this material is included in these statistics this fact should be remembered in comparing statistics with those of lumber production.

Nearly or quite 100 different woods are used in this country under their own names, while an unknown number find their way to shops and factories without being identified or separately listed, except under general names. In quantity the softwoods, the needle-leaf or coniferous trees, are most important, but there is a greater number of species among the hardwoods, or broadleaf trees. Yellow pine comes first with more than 8 billion feet, followed by white pine with 3 billion, and Douglas fir with a little more than 2 billion. It should be understood, however, that the term "yellow pine" includes several species the three most important of which are longleaf, shortleaf and lob-

lolly. Oak, including all species, has nearly 2 billion feet, and is the most important hardwood. Maple comes next.

Dogwood comes about halfway down the list with more than 7 million board feet, and of those species mentioned Turkish boxwood comes last, with less than 30 thousand feet, followed by many others too insignificant to list but making a total of all kinds of more than a million feet. Of the native species, laurel, holly and yucca fall very near the foot of the list in relative quantities used.

Fifty-five principal industries use wood as raw material. Their relative importance is hard to indicate, because quantity alone is not in all cases a criterion of value of an industry to the community in which it is situated, nor to the country as a whole.

More than one-half of the total consumption consists of planing mill products, the largest items of which are flooring, siding, ceiling, and finishing. The next industry, in point of quantity of wood used, is the manufacture of boxes and crates. Nearly four times as much wood is demanded by makers of boxes and crates, as by the builders of steam and electric cars, which come next, and five fold the amount that goes into furniture, which in turn leads vehicle manufacture. Vehicles demand surprisingly large supplies of wood, and much of it must be of a high class in order to meet requirements for frames, gears, and bodies.

Chairs, listed separately from furniture, come after novelties and supplies for dairymen, poultry keepers, and apiarists and just before handles and musical instruments. About midway down the list come pumps and wood pipes. Among the products important enough to list separately are canes and umbrella sticks, brooms, firearms, artificial limbs, and tobacco pipes.

The apportionment of wood among the various industries grades from planing mill products, which take most, down to aeroplanes and dry kilns, at the bottom of the list.



EDITORIAL

THE belief of the Germans in the necessity for conservation of the forests is evidently inherited by Germans and their descendants in this country, for we find, in an address by Leo Stern, an officer of the National German American Alliance, delivered at Milwaukee in November, this paragraph:—

"At every one of its meetings the National German American Alliance has heard the subject of forestry discussed by experts, and it has year after year adopted strong resolutions by unanimous vote in support of forest preservation and reforestation. On this question the Wisconsin alliance, which represents 50,000 citizens of the State, stands shoulder to shoulder with the national body."

It is gratifying to know that this statement was made before the members of the Wisconsin joint legislative committee on forestry, and it should give the members of this committee food for

thought. Even if some of them, as is doubtless true, have no knowledge of the forest needs of the state, even if they have an ingrained dislike for anything that savors of conservation, they cannot overlook the fact that some 50,000 voters of the state feel regarding forest conservation as Mr. Stern says they do. We opine that there is no member of the Wisconsin legislature so heedless of his own political future as to fail to give some consideration to the wishes of 50,000 voters. There are also many other thousands of voters of Wisconsin who are not members of the National German American Alliance and who feel just as strongly regarding the preservation of the state forests as do the aforementioned 50,000.

What great good might be done the cause if many other organizations would also, year after year, pass strong resolutions in support of forest preservation and reforestation.

TEXAS has joined the several other states which are demanding from their Legislatures, which meet early in the year, the passage of a law creating a state department of forestry and the employment of a non-political state forester who shall be supplied with a sufficient appropriation to do satisfactory work. It is significant that the demand for such a forestry law came first from the lumbermen of the state. This is an evidence of the value of

publicity in the cause of forest conservation. Not so many years ago it was practically impossible to find any number of lumbermen favoring the conservation of the forests. Now a large percentage of them realize the absolute necessity of it, and many of them are among the most enthusiastic members of the American Forestry Association and various other organizations devoted to securing the perpetuation of the forests.

In Texas the lumbermen have already passed resolutions calling upon the members of the next Legislature to give earnest consideration to a forestry bill and now they are aiding in the organization of a State Forestry Association, the special object of which is to work for state conservation. In Texas the productive timber area amounts to about 17,000,000 acres, or more than three times the total area of Massachusetts. In recent years timber has been so lavishly cut in the state that the extinction of the lumber industry was in sight, and none realized it better than some of the leading lumbermen there. Another danger has already been experienced, the increase in the number and the destructiveness of river floods owing to the excessive cutting of trees in the river bottom lands and on the watersheds.

A state forestry law would provide for replanting and the encouragement of reforestation on such areas and this would in some years largely prevent

the damage that is now likely to be done each year. The proposed State Board of Forestry will, if created, formulate plans for carrying on practical forestry throughout the state and will exercise supervision of all matters of forest policy and protection.

An important feature of the work would be the protection afforded against forest fires by systemized fire patrol work, and the education of the public in ways and means to guard against such fires. The Federal Government would also cooperate with the state in this fire protective work. At present only three Southern states, Kentucky, Maryland and West Virginia are receiving such cooperation.

An effort will be made to secure an appropriation of \$20,000 to carry on this state forestry work. It is expected that a state forest reserve will be established in east Texas and one in west Texas and perhaps a national forest reserve in central Texas.

CALHOUN COUNTY, Michigan, is to follow the example of other counties in various states and attempt roadside planting of trees for the dual purpose of beautifying the roads and also of protecting them, for such trees not only serve as windshields and minimize the effect of winds blowing off the loose surface but they also add to the life of roads by aiding to retain in them necessary moisture. Calhoun County, however, has gone a step farther than most others in deciding to plant fruit trees instead of shade trees, with the Utopian notion that when the trees bear fruit the fruit may be sold and the money thus derived be used in the up keep of

the road. The projectors of this plan say that it is eminently practical and we hope that it will prove so. There are 112 miles of road in the county and if the trees planted along these bear fruit the small boys of the county will certainly be in hearty favor of the idea. Whether enough fruit to sell is obtained from these trees however is not of prime importance, the fact remains that trees are to be planted and the road and the county residents both benefited. Perhaps the day will come when most of the roads throughout the country will be bordered by trees, and everybody will wonder why in the name of all that is sensible, it was not always so.

A PROGRESSIVE citizen of Rockford, Illinois, G. J. Boehland, is good enough to advise the American Forestry Association of the success of a plan he had for inspiring in the school children of Winnebago County, in which Rockford is situated, a love of trees. Last spring he presented

to each pupil in the city, county, and parochial schools a young tree to be planted wherever the children liked, and to each school a large tree to be planted in its playground. A total of 11,800 trees were thus given away by Mr. Boehland and now, six months after, he takes pride in reporting that a

large percentage of the trees are growing and are hardy while many of the children have become so interested that they have acquired more or less knowledge of trees, how to care for them, and their uses. It is now proposed to continue this good work next spring.

What would it not mean if one citizen in each city and town in the United States showed a similar interest in encouraging, in such an essentially practical way, a love of trees in the growing generation.

ABLE men the country over are aptly saying that one effect of the war upon the citizens of the United States will be to add to their belief in conservation. It has already developed, close observers of the general situation say, a noticeable trend toward appreciation of the value of conserving our resources, financial, and otherwise; to restricting extravagance in the use of commodities and in the pursuit of pleasures and frivolities; and to inspiring a desire for thrift. All of this will be beneficial. It will aid in a further realization of how foolishly and how recklessly various natural re-

sources have been wasted in years past; and will add strength to the movement to take proper care of what is left.

When the war ends greater exportation of timber than ever before is expected. There will therefore be greater cutting of our forests. This again calls attention to the need of closer utilization in logging and manufacturing, to the need of still better forest fire protection; to the encouragement of forest planting where practicable, and to every measure calculated to aid in the production of timber as a crop.

A Forester's Directory

The American Forestry Association wishes to compile and to keep up to date, a directory of foresters, in the United States, its possessions, Canada and Mexico.

This will be of considerable benefit to the members of the profession, as the Association is frequently asked for information concerning the whereabouts of foresters, and is also often asked to recommend foresters for various positions.

The American Forestry Association therefore requests each forester, whether he is a member of the Association or not, to send his full name, address, name of school or schools of which he is a graduate, and the feature, if any particular one, of his profession, in which he specializes.

This directory will be kept up to date from year to year, and will be available for any inquirers at any time.

Uses of Apple Wood

Apple wood, used almost exclusively for saw handles, also furnishes the material for many so-called brier-wood pipes and particularly for the large wooden type used in printing signs and posters.

Boxwood Expensive

One of the most expensive woods used regularly in an established industry in the United States is boxwood, the favorite material for wood engraving. It has been quoted at four cents a cubic inch, and about \$1,300 by the thousand board feet.



FOREST NOTES

Bristow Adams, who for some years has done excellent work in the Department of Information of the Forest Service, has resigned to take charge of a new department at Cornell University. He leaves the Forest Service on December 10, much to the regret of his associates there and of the many others who have so greatly appreciated his services whenever information was sought from his department. His work for the Service resulted in it getting widespread and very valuable publicity and aided materially in creating in the public mind a knowledge and an appreciation of what the Service is doing. His new work at Cornell will be upon somewhat similar lines. The University wishes to have a well organized bureau for general publicity and for furnishing the information for which its different branches are requested and Mr. Adams was asked by former assistant secretary of Agriculture Galloway, now head of the Agricultural Department at Cornell, to undertake the organization of such a bureau and to assume charge of it. While his many friends in the Service will regret losing him he takes with him their very best wishes for even greater success than he has already achieved.

What Chief Forester Henry S. Graves thinks of Mr. Adams' service is evident by his letter to Mr. Adams. He says:—

"It is a very great regret to me to learn that you are going to leave the Forest Service. I appreciate your position and under the circumstances could not expect you to do otherwise than you are doing. My regret is based entirely on the loss to us of your services. You

have created a place for yourself in our organization which will be very difficult to fill. Your contribution to the work has been a large one and it has been a contribution which I very deeply appreciate. Especially do I appreciate the loyal service that you have rendered to us and the way in which you have devoted your strength to the work, always with the single thought of the advancement of the interests of the Service. In leaving us you may be sure that you carry with you both our grateful appreciation of your past work and very best wishes for success in your new enterprise."

The Bureau of Insular Affairs of the War Department has received a cablegram from Manila, Philippine Islands, advising that the date for the opening of bids at the Bureau of Forestry in Manila for a concession covering the large forest known as the Tayabas-Camarines tract has been changed from November 14, 1914, to January 14, 1915.

A reforestation project is now under way in Muskegon County, Michigan, where 10,000 Norway and white pine will be planted on each of three tracts of land owned by John W. Wilson, Frank C. Whitney and F. S. Jacks, who in conjunction with Prof. C. A. Tyler, of the Michigan Agricultural College, have decided that it will pay them to reforest their unoccupied lands.

State Surveyor Samuel Higgins, of Roscommon, Michigan, has made pre-

liminary preparations for the reforestation of fifty-five 40-acre tracts of land located in Presque Isle County, Michigan. Sites for buildings necessary during the reforestation work have been selected and buildings are under way. Included will be a boarding house large enough for twenty men, the number to be employed in the work. Each forty will be planted with Norway, white and Russian pine as the chief varieties. Trees will be planted 5 feet apart and each tract will be protected from fire by a 16-foot clearance and in addition there will be a watch tower. The job represents the largest reforestation project yet undertaken in the State.

General education work in forestry is being carried on again this season by the New York State College of Forestry among High Schools, Granges, Men's and Women's Clubs and other organizations throughout the State of New York. This work is done with the idea that in spite of all the propagandist work that has been done in forestry in this country the man on the street is still quite ignorant of forest conditions and forest needs. In the winter of 1913-14 the College sent its foresters into 235 communities speaking to over 60,000 people. Already the present season the College has received applications from 142 organizations such as Granges, High Schools, Men's Clubs, Commercial Clubs, etc. At the present time from two to three counties are being made each week and foresters are talking to from 50 to 500 people at a lecture. During the week beginning November 16th, Professor R. P. Prichard gives illustrated addresses before four schools and granges in Erie County; Professor W. A. McDonald talks to three schools and a large Y. M. C. A. in Clinton county; Mr. Shirley W. Allen speaks before five High Schools in Westchester County.

In the national forests of District 4 of the Forest Service comprising parts of Utah, Wyoming, Nevada and Arizona, the 1914 forest fire season is practically ended.

The total of 399 fires this year is fifteen greater than in 1910, although the cost of extinguishing them was only one-third, and the total damage caused only $3\frac{1}{2}\%$ of that of the great fire year. In 1910, of a total of 384 fires, 237, or 62%, caused a damage of less than \$100, while 38%, or 147, each burned property worth \$100 or more. This season the number of fires whose damage was less than \$100 was $92\frac{1}{2}\%$, only 30 fires, or $7\frac{1}{2}\%$ of the total, doing a damage greater than \$100.

Seventy per cent of the fires occurred on the Idaho, Boise, Challis, Payette, Salmon, Targhee and Weiser Forests, lying in the main, in an east and west belt across central Idaho on the northern border of District 4, and 95% of the total expenditure for fires was incurred on these forests.

The timber destroyed was greatest on the Idaho, twenty million feet on 15,900 acres, and second greatest on the Salmon with 2,164,000 board feet, the acreage of timber land burned over on this forest being 10,818 acres.

The Supervisor of the Palisade speaks of the headway gained in coping with fires by use of automobiles, which in each case this year not only proved cheaper, counting the time of the men transported, than horse equipment, but of course contributed in a greater way in facilitating an earlier attack on the fire. This forest is surrounded by an unusual number of ranches and irrigated and dry farms, and the Supervisor states that he or District rangers were notified by from five to ten different persons of each fire, which shows the deep interest and splendid cooperation of the citizens generally toward the suppression of fires.

Upon the invitation of Hon. Frank L. Moore of Watertown, N. Y., President of the Empire State Forest Products Association, and also President of the American Paper and Pulp Association, the State College of Forestry at Syracuse developed for the annual meeting of the Empire State Forests Products Association at Utica on November 12th a very complete exhibit showing various kinds of timber preservation and the various materials used in preservation. This

exhibit attracted such favorable attention that the Association adopted a resolution commending the exhibit. Special exhibits of unusual interest were obtained from the U. S. Forest Products Laboratory at Madison, Wis., from the New York Central, the Erie, the Lackawanna and Pennsylvania railroads, the Barrett Manufacturing Company, the Eppinger & Russell Company, the Grasselli Chemical Company and the U. S. Wood Preserving Company and others. At the close of the meeting this exhibit was transferred to Syracuse where it will be displayed for a week in the rooms of the Technology Club of Syracuse.

Prof. R. R. Chaffee, of the Pennsylvania State College Department of Forestry, has undertaken a shingle experiment which he is desirous to have show two things, first, the durability of different kinds of shingle nails and in turn the increased life of the shingle, second, the chemical effects of the nail upon the shingle, and a thing of perhaps minor consideration, that of careful nailing, paying particular attention to the number of nails to the shingle and the total number of nails to each hundred square feet. He already has one roof, with a north and a south exposure, laid with western Red Cedar shingles, using five different kinds of nails, namely, pure copper, pure zinc, zinc-clad nails, the ordinary wire shingle nail, and the blue-cut nail. He is making arrangements to lay another roof with both Red Cedar and Cypress and introducing two other kinds of shingle nails, namely, copper-coated and lead-coated nails. He is making as thorough an investigation as possible of the nails from different companies, paying particular attention to zinc-coated nails and using in this connection both the Preece copper sulphate immersion test and the caustic soda test for determining thickness of coat and the thoroughness of application. Mr. J. R. Morehead, Secretary of the South-western Lumbermen's Association, has been of material assistance in furnishing material and information. He, for a long time, has been trying to find a

better shingle nail. It is extremely foolish to use a five-year nail in putting on a thirty-year shingle.

President Henry Landes, of the University of Washington, in his yearly report of the institution recommends the establishment of a complete forest products laboratory at the State University. This recommendation will be presented to the legislature at the session this winter. An estimate of \$50,000 is made of the cost of the establishment of such a laboratory.

W. W. Colton Forest Commissioner of West Newton, Mass., writes: "The principal forestry problem facing us here is the controlling of the Gypsy and Brown Tail Moth pest. We have an area of 18 square miles, all of which is fairly well settled, Newton being a wealthy residential section near Boston. We are confronted with a large number of small areas of woodland which are, unfortunately for us, made up mostly of oak growth, this oak growth being the choicest food plant of the gypsy and brown tail moths which naturally makes it much harder to care for. Most of these groves surround beautiful residences, making it particularly essential that they be properly cared for and preserved. Where it is possible, these groves are thinned and the production of more resistant species encouraged. The remainder are cared for by the usual methods of winter treatment of egg clusters and spring and summer spraying with arsenate of lead. The city owns and operates seven high-power sprayers, one small power sprayer and ten barrel sprayers. The past summer we used forty tons of arsenate of lead in our spraying operations. The flight of brown tail moths this summer was very light in Newton as a consequence of which we have very little work to be done on this pest this winter. The gypsy moth is about the same as usual, being scarce when thorough spraying was done and plentiful where the work was neglected. It is probable that by the end of December we will have expended \$39,000 for the suppression of these pests alone."

Fire protective work in Kentucky has been very greatly strengthened this fall. At the present time there are four district fire wardens, three in the Eastern part of the State and one in the Western part of the State. In addition to the federal patrolmen this fall, it has been found possible to appoint twelve State wardens so that the intensity of patrol is very greatly increased. Also in a limited number of counties in Western Kentucky wardens have been placed. Heretofore, all the fire protection has been confined to the Eastern section of the State. A fire map of Kentucky and a Manual of instructions to the wardens is in the process of preparation. An additional forest nursery has been established at Frankfort on a small scale this fall and the State nursery at Louisville has been very materially increased in size. During the summer just passed, an extensive water work system has been placed in the nursery at Louisville and a building has been erected for storing seed and handling trees for shipment. The nursery at Louisville promises to be considerable of a show place at no distant future date, since it is on the Western Parkway which is one of the links in the system of boulevards surrounding Louisville. The nursery grounds are adjacent to a similar area decided to the Federal Government for the purpose of a fish hatchery and every effort will be made to make both the State nursery and the federal fish hatchery attractive points of interest in Louisville.

The New York State Forestry Association organized at Syracuse in January, 1913, has made rapid growth during the two years of its existence and now has over 500 members from every section of the State and from many states outside of New York. It will hold its Third Annual Meeting in Convention Hall in Rochester in January, 1915, and it is expected to have leading foresters and naturalists from all parts of the country on its program. The evening meeting will be given up to informal addresses and moving pictures

showing woods operations, activities of forest schools and the life of the forester.

The Department of Agriculture has undertaken the investigation of a serious disease which is affecting the Rocky Mountain bighorn sheep and the mountain goats, and is reported as existing on the Lemhi National Forest in Idaho.

The forest officers think that it is the same disease that caused the mountain sheep to die in great numbers during 1882-3. The nature of the disease is not known, though it results fatally and sheep affected with it seem to have rough and mangy coats and are very much emaciated. Three bureaus of the department are engaged in the study—the biological survey, bureau of animal industry, and the forest service. A competent veterinarian has already gone to Idaho to start the work.

Very little actual loss from forest fires has occurred on the Michigan State Forests during the past season. With each year's added improvements along protective lines the facilities for handling fires promptly and effectively are increased and the chances of serious damage from this source are proportionately reduced. The forests are now better equipped than ever against the inroads of fires.

The improvements made this summer include the erection of steel lookout towers, and the construction of telephone lines, bridges, roads, and fire lines. Seven lookout towers are now in use on the various State Forests, and to afford communication between these towers and headquarters thirty-two miles of telephone lines were built. The system of fire lines on each of the Forests was considerably extended this year, a total of seventy-seven miles of new lines having been added. The total mileage of fire lines on all of the Forests is now something over two hundred miles.

This year Michigan was added to the list of those States receiving Federal aid in fire protection under the provisions of the Weeks Law. A sum not to exceed \$5000 to be used in defraying the salaries of the Federal patrolmen

was allotted to this State. This cooperative fund made possible the addition of nine men to the State's patrol force, four of the Federal patrolmen being stationed in the Upper Peninsula and five in the Lower Peninsula. Owing to delay in getting the work started, only a portion of the cooperative fund will be used.

The New York State College of Forestry at Syracuse University is the first College in the country to employ a full Professor to devote all his time to Forest Entomology and another to give all of his time to Forest Zoology. This is believed to be prophetic of the time when these subjects will be recognized as of large importance in Forestry and when they will receive the attention which has long been given to them in Europe. This action on the part of the College is in line with its efforts to make it possible for men to specialize through the four years of work in Forest Entomology and Zoology.

The Department of Forestry of Pennsylvania State College arranged an exhibition for the Forestry Section of the Agricultural School held November 13 and 14 which had two distinct features, Farm Forestry and Utilization. For the first, there was demonstrated the preparation of a farm nursery even to the germination, the growing seedlings, the transplants, and planting out. A miniature creosoting model suitable for farm purposes and growth figures for growing fence posts constituted the rest of the Farm Forestry Exhibit. For Utilization there was a fine exhibit of Hemlock, using the tape method of following out the products from the different parts of the tree. The school showed Utilization of practically everything that goes to the mill and including the waste in the woods. The Central Pennsylvania Lumber Company, the Oak Tanning Company, the Bayless Paper and Pulp Company, the Standard Wood Company and Wheeler and Dusenbury, all of Pennsylvania, and the Northern Hemlock and Hardwood Association through Mr. R. S. Kellogg,

helped to make this a success. Other features of the Exhibit were Hickory and Birch Utilization.

Ch. Guengerich, of Joplin, Missouri, writes: "I read with great interest the article on Roadside Tree law in your September number. Formerly our Board paid attention to trees along our roads by planting and trimming, but telephone and power lines destroyed so many trees that we gave up in despair. At the last session of the Legislature we tried for a law restricting the use of highway right of way by these pole lines to the north and east side of roads, since we have to have these lines, and shade on the south and west sides would be most desirable. We aim to try again this year for such a law."

The settlement and development of the west does not appear to have greatly reduced the number of animals which prey upon domestic live stock, and the loss from that source alone runs into the millions of dollars each year. Within the forests, however, the number of domestic animals killed has been appreciably reduced by the campaign against wild animals waged by the officers of the Forest Service. During the past eight years forest officers have killed over thirty-five thousand predatory animals, consisting of coyotes, wolves, bear, mountain lion, wild cats, lynx, etc.

The State Board of Trade of West Virginia at its last meeting passed a resolution favoring the passage of legislation for forest conservation and instructing the committee on Development and Protection of State Resources to draft such legislation as it may deem desirable to aid in securing the passage of suitable forestry legislation by the next Legislature.

One of two features of special interest in the course in Lumbering this year in the Department of Forestry at the Pennsylvania State College is the introduction of a current event day each week at which time each member of the

class discusses or presents the articles of interest in one of the lumber journals which has been assigned to him for an entire month. In this way he becomes quite intimately acquainted with the leading lumber journals of the world. The other feature is Pacific Logging Congress Day, held on November 19, at which time each man presented, with the aid of the stereopticon, one of the articles given at the last annual session of the Pacific Logging Congress.

The American Road Congress in its session at Atlanta, Ga., recently adopted, among other resolutions, the following:

"That the Federal Government be urged to build highways across all Indian and Forest Reservations and all other Federalized areas where such

connecting links are essential parts of established through routes of travel."

The fifth annual meeting of the North Carolina Forestry Association will be held at Raleigh, N. C., on Wednesday, January 13, and a number of speakers have been assigned subjects of importance to the well-developed forest conservation movement in the State.

Forest students will be interested in learning that the members of the Forestry Club of the Forestry Department of the Iowa State College at Ames, Iowa, have adopted an official shirt, a dark grey stag shirt with the Forest Service emblem and the class numerals.

ARBORIST—FORESTER

By ALFRED GASKILL

THIS is a plea for the revival of an expressive old English term. As everybody knows a widespread interest in tree culture has produced a class of workers who give special attention to shade and ornamental trees. In many directions, especially through organized municipal activities, this field is broadening. Those men who as skilled foresters are engaged in it undoubtedly have a right to the title despite the character of their work, but the term city forester, or even forester as applied to one who cares for individual trees, is a misnomer. The terms tree warden, tree doctor, tree surgeon are equally unsatisfactory be-

cause they usually are connected with artisans rather than with professionals.

As a substitute for all these faulty terms the simple, descriptive, thoroughly established word *arborist* is suggested. It is found in all the standard dictionaries, has been used for years where tree culture, as distinguished from forest culture, is practiced, and satisfies an actual, present need.

It is scarcely necessary to add that arborists and arboriculture are as worthy and as important as forestry and silviculture. There is no question of inferior and superior. The proposition is made solely that we may have a means of indicating succinctly the line of work in which a specialist is particularly active.

Changes of Address

Members of the American Forestry Association are requested to send notification of any change in address so that the AMERICAN FORESTRY MAGAZINE and other mail will not be delayed in reaching them.

Such notices are desired before the 25th of each month so that the address may be changed for the monthly mailing of the magazine.

CURRENT LITERATURE

MONTHLY LIST FOR NOVEMBER, 1914.

(Books and periodicals indexed in the Library of the United States Forest Service.)

Forestry as a Whole.

Manuals of forestry

Moon, Frederick Franklin, and Brown, Nelson Courtlandt. Elements of forestry. 392 p. il., tables, maps. New York, J. Wiley & Sons, 1914.

Proceedings and reports of associations, forest officers, etc.

India-Bengal-Forest dept. Annual progress report on forest administration for the year 1912-13. 48 p. Maps. Calcutta, 1913.

Royal Scottish arboricultural society. Transactions, vol. 28, pt. 2. 278 p. pl. Edinburgh, 1914.

Forest Education.

Exhibitions

North Carolina—Geological and economic survey. Children's forestry exhibits at county fairs. 3 p. 23 cm. Chapel Hill, N. C., 1914. (Press bulletin 131.)

Forest Legislation.

Kalbfus, Joseph, ed. Commonwealth of Pennsylvania; digest of the game, fish and forestry laws, 1913. 320 p. Harrisburg, Pa., 1913.

Louisiana—Legislature. Conservation laws of Louisiana as applied to mines and minerals, forests, birds, game and fur-bearing animals, fresh water fish, sea food and water bottoms, comp. 1914-15. 172 p. New Orleans, 1914.

Maine—Forest commission. Maine forestry district: law creating fire district, instructions to wardens, list of wardens appointed, etc., 1914. 53 p. Augusta, 1914.

Forest Description.

Silcox, F. A. The resources and opportunities of the forests of Montana. 15 p. il. Missoula, Mont., Dept. of agriculture and publicity, 1914.

Forest Botany.

Trees: classification and description

Arnold arboretum. Bulletin of popular information, no. 63. 3 p. Jamaica Plain, Mass., 1914.

Maiden, J. H. Forest flora of New South Wales, pt. 54. 22 p. pl. Sydney, N. S. W., Govt. printer, 1914.

Saunders, Charles S. With the trees and flowers in California. 286 p. pl. N. Y., McBride, Nast and Co., 1914.

Silvics.

Ecology

Shreve, Forrest. A montane rain-forest; a contribution to the physiological plant geography of Jamaica. 110 p. pl., map, diagrs. Wash., D. C., Carnegie institution, 1914.

Studies of species

Hanzlik, Edward J. & Oakleaf, Howard B. Western hemlock; its forest characteristics, properties and uses. [9] p. il. Portland, Oreg., The Timberman, 1914.

Forest experiment stations

Schweizerische centralanstalt für das forstliche versuchswesen. Mitteilungen, v. 11, no. 1. 148 p. il. Zürich, 1914.

Silviculture.

Planting

Case, Gerald O. Coast sand dunes, sand spits and sand wastes. 162 p. il., pl. London, St. Bride's Press, 1914.

New Zealand—Dept. of lands and survey. Report on state nurseries and plantations for the year 1913-14. 47 p. pl., maps. Wellington, 1914.

North Carolina—Geological and economic survey. Preventing erosion in Piedmont drainage districts. 5 p. Chapel Hill, N. C., 1914. (Press bulletin 133.)

Forest Protection.

General

North Carolina—Geological and economic survey. Can Mt. Mitchell's spruce forests be saved. 4 p. Chapel Hill, N. C., 1914. (Press bulletin 135.)

Forest fires

Holmes, J. S. Forest fires in North Carolina during 1913 and state forest fire prevention in the United States. 82 p. Raleigh, N. C., 1914. (N. C.—Geological and economic survey. Economic paper no. 37.)

Forest Engineering.

Surveying and mapping

Robinson, R. L. Notes on Kerry woods, illustrating methods of collecting and utilizing information for a forest survey. 64 p. pl. London, Board of agriculture and fisheries, 1912.

Forest Utilization.

Lumber industry

Foster, J. H. Marketing white pine in New Hampshire with preliminary suggestions as to the care of the woodlot. 39 p. il. Durham, N. H., 1914. (New Hampshire college and experiment station. Extension bulletin no. 3, Dept. of forestry.)

Jones, Arthur F. Lumber manufacturing accounts. 112 p. N. Y., The Ronald press co., 1914.

National fire protective association. Lumber and lumber drying, with notes on steam jets; suggestions for improvement of the fire hazards, prepared by the Committee on manufacturing risks and special hazards. 18 p. Boston, Mass., 1914.

Wood-using industries

Bray, C. I., & Forrester, D. R. Silos in Oklahoma. 83 p. il. Stillwater, Okla., 1914. (Oklahoma—Agricultural experiment station. Bulletin 101.)

Stadler, J. Pulp and news paper manufacture. 14 p. il., pl. Montreal, Canadian society of civil engineers, 1914.

Auxiliary Subjects.

Botany

Piper, Charles Vancouver, and Beattie, Rolla Kent. Flora of southeastern Washington and adjacent Idaho. 296 p. Lancaster, Pa., New Era printing co., 1914.

Statistics

Milner, Robert Teague. East Texas; its topography, soils, timber, agricultural products, people, rainfall, streams, climate, etc. 40 p. Austin, 1914. (Texas—Dept. of agriculture. Bulletin 38.)

Periodical Articles.

Miscellaneous periodicals

Agricultural journal of the Union of South Africa, Aug. 1914.—Prosopis juliflora, the mesquite or algaraba tree, and Prosopis pubescens, the screw bean, by C. C. Robertson, p. 233-9.

American botanist, Aug. 1914.—The cactus and the desert, by Willard N. Clute, p. 86-90; Osage orange as a dye-wood, p. 113.

American sheep breeder, Oct. 1914.—Grazing in national forests; better rates for sheep, by A. F. Potter, p. 646.

Bulletin of the Torrey botanical club, July 1914.—Observations on the edge of the forest in the Kodiak region of Alaska, by Robert F. Griggs, p. 381-5.

Country gentleman, Oct. 17, 1914.—Don't suffocate trees; when grading leave a breathing space for the roots, by Phebe Wescott Humphreys, p. 1717-18.

Country gentleman, Oct. 31, 1914.—Does the windbreak pay? by Samuel J. Record, p. 1776-7.

Fire prevention news, Oct. 1914.—Fire situation in the national forests, by Bristow Adams, p. 9-10.

Gardener's chronicle, Sept. 12, 1914.—Tree-planting in Uruguay, p. 192.

Gardener's chronicle, Oct. 17, 1914.—A new hybrid poplar, by A. Henry, p. 257-9.

Journal of heredity, Oct. 1914.—Tree growth and seed, by James B. Berry, p. 431-4.

Nineteenth century, Sept. 1914.—Afforestation and timber planting in Ireland, by J. Nisbet, p. 643-59.

Popular science monthly, Nov. 1914.—Tree distribution in central California, by W. A. Cannon, p. 417-24; Rubber, wild, plantation and synthetic, by John Waddell, p. 443-56.

St. Nicholas, Oct. 1914.—The watch towers of the forests, by Day Allen Willey, p. 1132-5.

Science, Nov. 6, 1914.—Tricarpellary and tetracarpellary ash fruits, by Charles Edwin Bessey, p. 679.

Scientific American, Sept. 26, 1914.—Fire precautions in a California park, p. 251.

Scientific American, Oct. 24, 1914.—Why a girdled tree can continue to grow, p. 339.

Torrey, Oct. 1914.—The vegetation of Connecticut, by G. E. Nichols, p. 167-94.

United States—Department of agriculture. Journal of agricultural research. Oct. 1914.—Heart-rot of oaks and poplars caused by Polyporus dryophilus, by George C. Hedgecock, and W. H. Long, p. 65-78.

United States—Department of agriculture. Weekly news letter to crop correspondents, Oct. 21, 1914.—Wood ashes if stored and kept dry may furnish a valuable source of potash, p. 3-4.

United States—Dept. of agriculture. Weekly news letter to crop correspondents, Oct. 28, 1914.—Wood lot improvement, fuel, and fertilizer go hand in hand, p. 3.

Trade Journals and consular reports

American lumberman, Oct. 17, 1914.—The manufacture of charcoal, p. 23; Commercializing southern moss, p. 26.

American lumberman, Oct. 24, 1914.—Utilizing the national forests; plans for the Olympic reserve, by Henry S. Graves, p. 29; Potash from wood ashes, p. 35.

American lumberman, Oct. 31, 1914.—Underwriters' laboratories roofing tests, p. 24; Proof of superiority of wooden truss roofs, p. 34-5.

Canada lumberman, Oct. 15, 1914.—The telephone a great aid in the bush; logging operations and fire ranging facilitated, by Charles E. Read, Jr., p. 31; Lumber consumed in a battleship, p. 40-1.

Canada lumberman, Nov. 1, 1914.—Cableway logging operating methods, by Asa F. Williams, p. 34-5; Overhead yarding, by James C. Hearne, p. 48.

Engineering record, Aug. 29, 1915.—Factors affecting structural timber, by H. S. Betts, p. 255-7.

Engineering record, Sept. 26, 1914.—Factors affecting structural timber, by F. J. Hoxie, p. 364.

Gulf Coast lumberman, Nov. 1, 1914.—Regrading as a legitimate practice, by D. E. Mead, p. 18, 234.

Handle trade, Nov. 1914.—Making vehicles and parts in Ohio, p. 3-4.

Hardwood record, Oct. 25, 1914.—The lowly buckeye, p. 21; Compression failures as defects, by L. J. Markwardt, p. 24-5; The lead pencil supply, p. 25; Effect of locality on growth, by S. J. Record, p. 27; Commercial uses of sabicu, p. 31.

- Hardwood record, Nov. 10, 1914.—Wood ashes as a resource, p. 22-3; Musical instrument exports, p. 28.
- Lumber trade journal, Nov. 1, 1914.—Interesting dry kiln information, p. 15-16; Small timber and logging costs from profit standpoint, by W. W. Ashe, p. 30-1; Technicalities of Louisiana log scaling rules are explained, by L. Palmer, p. 31-2; Logging operations as carried on in southern Brazilian forests, by G. W. Patterson, p. 32-3.
- Municipal journal and engineer, Oct. 29, 1914.—Wood block pavement in Newark, by Wm. A. Howell, p. 623-6; Municipal tree planting, by Andrew Linn Bostwick, p. 632.
- Paper, Oct. 4, 1914.—Raw materials for paper pulp in the south, by Vasco E. Nunez, p. 15-17; The forest resources of British Columbia, by H. R. MacMillan, p. 17-18, 38.
- Paper, Oct. 21, 1914.—By-products of chemical pulp manufacture; the recovery of turpentine, rosin and pine oil, p. 15-16; The chemical analysis of paper, by Henry Aldous Bromley, p. 17-19, 32.
- Paper, Nov. 4, 1914.—Germany's resources in paper-making material, by Carl G. Schwalbe, p. 17-18.
- Pioneer western lumberman, Oct. 15, 1914.—Finishing redwood, the wood everlasting, in the most effective manner, p. 9; Result of pulp-making tests on redwood and its bark, p. 13; Long bow in ye olden time and now, p. 15; Wood block paving in prominent cities, p. 19-20; Native wood used for sleepers in India, by M. K. Moorhead, p. 23.
- Pioneer western lumberman, Nov. 1, 1914.—Production of redwood, the wood everlasting, in Humboldt county, by George A. Kellogg, p. 21.
- St. Louis lumberman, Oct. 15, 1914.—Forests of South Carolina, p. 26-7.
- Southern industrial and lumber review, Oct. 1914.—Life of creosoted yellow pine, by F. B. Ridgeway, p. 31.
- Southern lumberman, Oct. 31, 1914.—Some researches of the Forest products laboratory of interest to lumbermen, by Howard F. Weiss, p. 38.
- Timber trades journal, Oct. 10, 1914.—Afforestation in Scotland; work for consumptives, p. 569.
- Timber trades journal, Oct. 17, 1914.—Permanent way materials, sleepers and crossing timbers, by Charles Travis, p. 576.
- Timber trades journal, Oct. 24, 1914.—The distillation of wood waste, p. XV.
- United States daily consular reports, Oct. 16, 1914.—Camphor production in India, by Henry D. Baker, p. 288.
- United States daily consular report, Oct. 22, 1914.—Plans to manufacture wooden toys in England, by Albert Halstead, p. 396.
- United States daily consular report, Oct. 29, 1914.—Mine timber for British coal fields, by Lorin A. Lathrop, and Walter C. Hamm, p. 585-7.
- United States daily consular report, Nov. 3, 1914.—Indian cashew-nut industry, by Henry D. Baker, p. 566-7; Export trade in Indian teakwood, by John Stuart Hunt, p. 570-1; Valuable Philippine hardwoods, by A. E. Carleton, p. 572.
- United States daily consular report, Nov. 10, 1914.—British Columbia timber industry, by R. E. Mansfield, p. 683; Outlook for chemical wood pulp in England, by W. Henry, p. 688.
- Wood-worker, Oct. 1914.—Casket manufacturing developments, by David C. Gray, p. 34; Quarter-sawing oak, by R. C. Leibe, p. 42.

Forest journals

- Allgemeine forst- und jagd-zeitung, Aug. 1914.—Beiträge zur waldgeschichte der badischen Pfalz, by Hans Hausrath, p. 253-63; Ermittlung der minimalhalbmesser von wegkurven für langholztransport, by Gehrhardt, p. 263-71.
- Canadian forestry journal, Oct.-Nov. 1912.—Forest insect investigation in British Columbia, by C. Gordon Hewitt, p. 102-3; Birds and forest protection, by C. Gordon Hewitt, p. 104-7.
- Forest leaves, Oct. 1914.—British forestry, by Wm. Schlich, p. 165-6; The mangrove, by J. T. Rothrock, p. 168.
- Hawaiian forester and agriculturist, Sept. 1914.—Creation of two forest reserves, p. 273-85.
- Naturwissenschaftliche zeitschrift für forst- und landwirtschaft, Aug., 1914.—Hitzetod junger pflanzen, by Ludwig Schuster, p. 377-8; Die kolloide der tonigen und humusböden, by P. Rohland, p. 380-5; Neuere untersuchungen über bodenverkitung durch mangan bezw. kalk, by M. Helbig, p. 385-92; Ballenpflanzung einjähriger sämlinge, by Carl von Tubeuf, p. 394-8.
- Quarterly journal of forestry, Oct. 1914.—Measurement of woods for statistical purposes, by D. W. Young, p. 253-75; Tree pruning, by E. R. Pratt, p. 276-7; Larch killed by a longicorn beetle, by B. B. Osmaston, p. 277-9; Summer meeting, 1914; visit to Jervaulx, Fountains abbey and Washburn valley estates, by W. H. Bennett, p. 283-91; Report of the judges on the plantations and home nurseries competition held in connection with the Royal agricultural society's show at Shrewsbury, 1914, by W. B. Havelock and J. McLaren, p. 292-315; The forestry exhibition at the Shrewsbury show of the Royal agricultural society of England, by A. Henry, p. 315-20; Timber scaling in British Columbia, by H. R. McMillan, p. 334-7.

AMERICAN FORESTRY'S ADVERTISERS

FORESTERS ATTENTION

AMERICAN FORESTRY will print free of charge in this column advertisements of foresters wanting positions, or of persons having employment to offer foresters

WANTED—FORESTERS—A few excellent positions open for skilled foresters or experts in shade tree work. Some of these will require all of a man's time and others can be filled in connection with his regular work. The compensation is liberal. Please state references and experience. Address P. S. R., care American Forestry Association.

WANTED—Position wanted by graduate forester. Have had one season's experience with the Government, one with a lumber company and some in city forestry. Have passed the Civil Service examination for forest assistant. Address "G. D. C.," care AMERICAN FORESTRY.

YOUNG MAN—Graduate Surveyor with experience in that line and also in bookkeeping, desires position with lumber operator. Have had U. S. Forest Service experience and scaled for large operator in the North. Address "Z," care AMERICAN FORESTRY.

WANTED—Graduate forester as representative in connection with tree surgery work. Give full particulars covering training and experience and address THE PLANT SERVICE BUREAU, 614 Pennsylvania Building, Philadelphia, Pa.

WANTED—By young man intending to study forestry, position with lumber company, surveying party, or other position by which he can gain practical knowledge. Address L. L., care AMERICAN FORESTRY.

YOUNG MAN, 27 years old, unmarried, university training, business experience and three years of practical experience in surveying and construction, including preliminary surveys, estimates, railroad and highway location surveys and construction, topographic surveys, mapping, etc. Capable of taking charge of party, desires position with forester or lumber firm. Best references from former employers. Address "T. B. C.," care AMERICAN FORESTRY.

FORESTER, with seven years' practical experience, desires a position as Forester. Have had considerable experience in reforestation and management, also fire protection. Address "T. F. H.," care AMERICAN FORESTRY.

FOREST ENGINEER—Best of American and European training. Five years of practical work along lines of organization, administration, protection, cruising and appraising. Would like position with some large timber holding company, railroad, or municipal watershed. Best of references. Address "CRUISER," care AMERICAN FORESTRY.

A forest school graduate with experience in U. S. Forest Service and with lumber company, also possessing thorough business training, will consider offer of good forestry position. Address M., care AMERICAN FORESTRY.

FORESTER with 15 years experience Estimating, Surveying, Mapping, and in the care of private holdings desires position. Perfectly reliable in every way, and with executive ability. Address "A," care AMERICAN FORESTRY.

WANTED—By Graduate Forester, position in forestry work in South, or Tropics. Slight knowledge of Spanish and German. Scientific or experimental work preferred. Address, "F. W. H.," care of AMERICAN FORESTRY.

FORESTER of technical training, six years' teaching and practical experience in different parts of the United States, wishes to better position. Best references from university and employers, and others. Address G. O. T., care AMERICAN FORESTRY.

WESTERN ESTATE MANAGER—Graduate agriculturist and forester, raised on Western farm, two years' experience at lumbering and for past six years with the U. S. Forest Service, engaged in timber estimating, appraisal and forest management in Washington, Idaho and Montana, desires private work. Especially equipped to advise concerning or to manage timberlands or combined timber and farm estate. References furnished. Address R. I. F., care AMERICAN FORESTRY.

SURVEYOR—Young man 21 having three years experience as Transitman, Rodman, and Chainman with a City Surveyor desires a like position in Forestry. Has ambition to become a Forestry Expert. A No. 1 references, reliable and trustworthy. Particulars on request. Address "D. H. F.," care AMERICAN FORESTRY.

SURVEYOR—For large tracts of land, roads and railroads; furnishes instrument; capable of taking charge of party; would like position in South that will last all winter. Address "T. B. W.," care AMERICAN FORESTRY.

GRADUATE FORESTER—Practical experience in cruising, mapping and scaling. Eager to go anywhere. References furnished. Address R. L., care of AMERICAN FORESTRY.

WANTED—By Forester, a position with lumber or paper company. Experience in looking after camps and forestry work. Address W., care AMERICAN FORESTRY.

PRACTICAL FORESTER wants situation on private estate. Has practical experience of sowing, laying, planting out, pruning, thinning, firebelts, ditching, rotation planting, mixed planting and thorough knowledge of fencing and tree felling. Has had seven years experience on best managed forestry area in Scotland. Address, "Raith," care AMERICAN FORESTRY.

PRACTICAL FORESTER wants position with city Park Commission. Understands fully nursery work, planting, trimming and tree surgery. Best references and practical experience. Address "L. M. E.," care AMERICAN FORESTRY.

WANTED—A position as an inspector of ties, timbers and lumber, by a forest school graduate with experience in inspecting ties, timbers and lumber. Can furnish best of references. Address Inspector, care AMERICAN FORESTRY.

Graduate of Forestry School, having studied forestry and lumbering operations in this country and Germany, with experience in the U. S. Forest Service, and also in state and private nursery work, would like position with forest engineering firm or lumber company. Best of references. Address XY, care of AMERICAN FORESTRY.

ENERGETIC Post Graduate Forester desires position as an assistant in park or city forestry work. Subordinate duties preferred. Best of references. Address M. M. J., care of AMERICAN FORESTRY.

FOREST ENGINEER with Forest Service training in Colorado, Wyoming, private work in California, and six years' experience in the lumber industry on the Pacific Coast, would like field work in any part of the United States. Estimating of timber lands and topographic surveying a specialty. Four years' technical training. Address, "D.," care AMERICAN FORESTRY.

